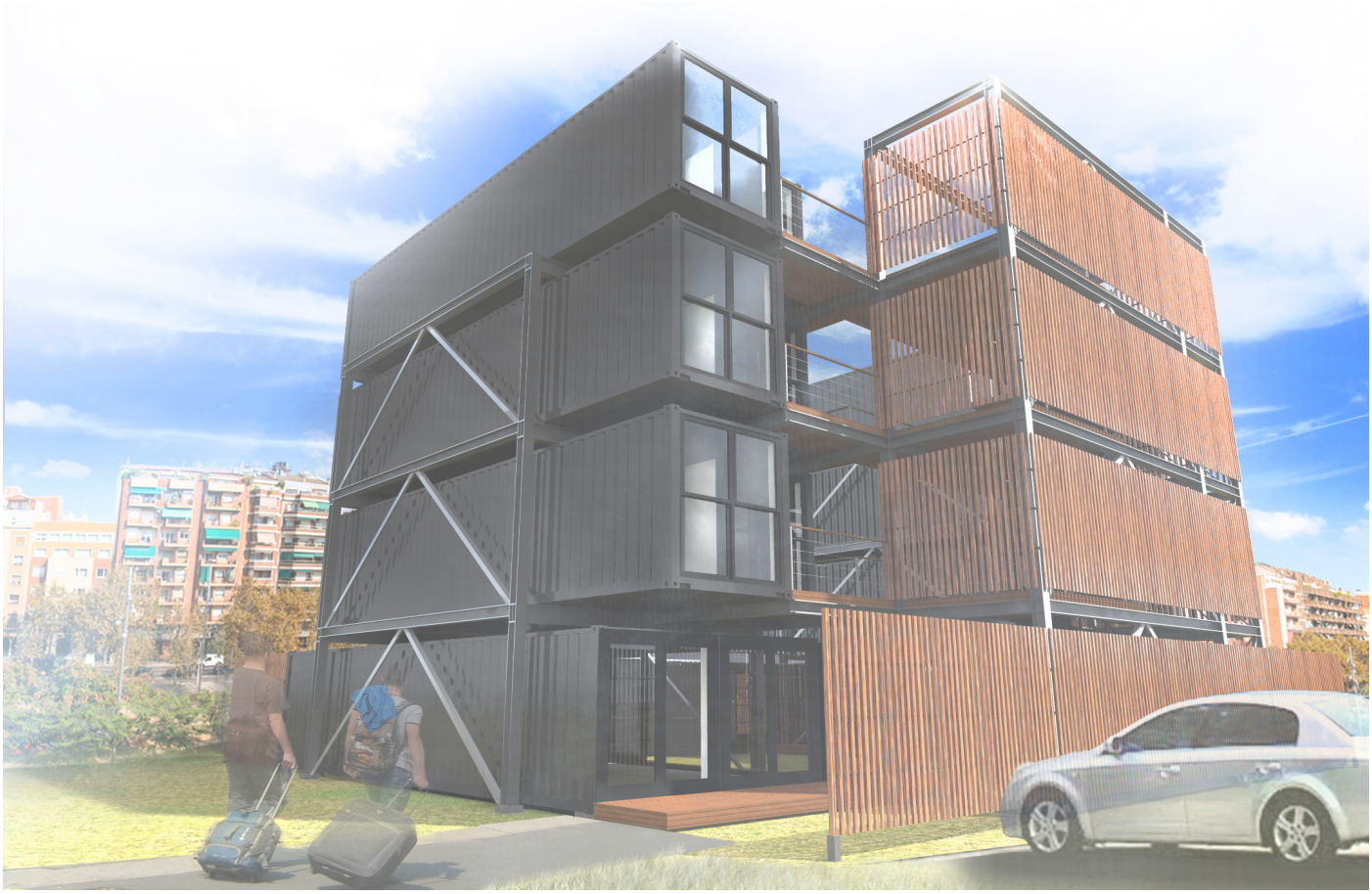

“MODULAR COWORKING STATION”

Politecnico di Milano
Scuola di Architettura e Società - MI
Laurea Magistrale
ARCHITETTURA

thesis supervisor:
DI PASQUALE JOSEPH

Thesis by:

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786091

2014

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PROJECT DISCRIPTION

Project of the “Modular coworking station” is based on a conceptual collaboration of a shipping container architecture and coworking spaces.

Main idea is to make an easy buildable and cheap sollution of a working space, where everyone could find their way to work.

Steel frame structure of the project brings an advantage of mobility. Owners of the coworking station will be able to modify or to move modular offices in any time, ass well as add some more modules in case of a devellopment.

Concept of the module is a simplisity and sustainability. Use of containers in architecture alredy is a sustainability, because new production of materials was involved. And simlisity is in use of a module, mobility and carelessness.

In a sustainability concept are used such sistems as: naturall cross ventilation, fan coil mechanical ventilation, grey water reuse, photvoltaic solar system and polyurethan insulation.

RESEARCH PART

WHAT IS COWORKING?

THE CONCEPT is simple:

THE SPACE

-diaphanous spaces with lots of light
-meeting rooms

PRICING

50 - 250 EUR/month

WORKSPACE COMPARISON

	Private Office	Business Centre	Coworking Space
Costs	from ~ 700 EUR/month	~ 400 EUR/month per person	~50 - 200 EUR/month per person
Internet	?	~40 EUR per person	Included
Cleaning, concierging and maintenance	?	Included	Included
Socialization and networking	Only among your team, or with suppliers.	Punctually, with other customers of the business center, in coffee/reception areas.	Frequently, with other members of the space or non-members in a shared workspace and open events.
Security and confidentiality	Self managed Internet.	Highly secure Internet.	Highly secure Internet.
Ideal for	Big companies.	Medium size startups and companies.	Independent workers, start-ups, small teams, nomad workers, change managers.

THE LEARNING OPPORTUNITIES

- constant skill sharing and learning
- organized events
- workshops
- exhibitions, cultural and professional conferences.

“A company is like a bicycle. You move or you fall” - John D. Wright

COWORKING VISA

A coworking visa allows active members of one space to use other coworking spaces around the world for free for a set number of days.

HISTORY OF COWORKING?

YEAR

SEP 1995

1ST. PUBLIC HACKERSPACE IN BERLIN

JAN 2002

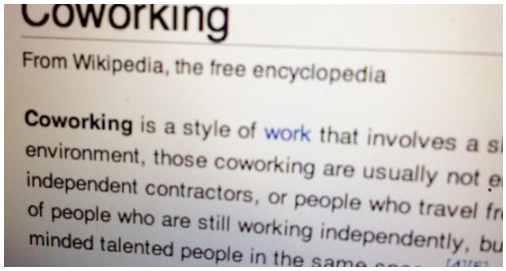
1ST. COWORKING SPACE IN VIENNA

OKT 2007

1ST. COWORKING SPACE IN BARCELONA

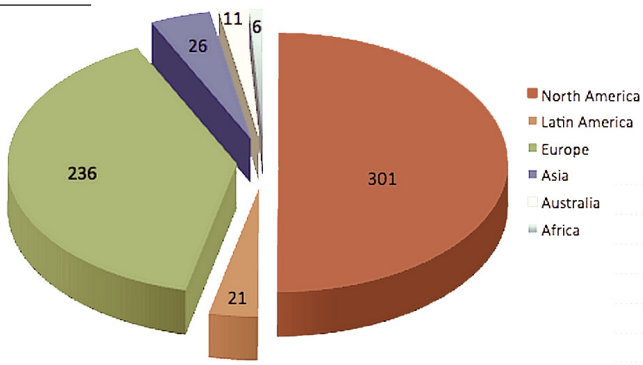
OKT 2007

"COWORKING" ON WIKIPEDIA



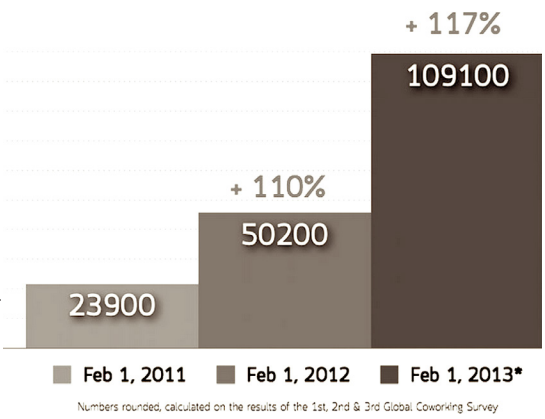
OKT 2010

600 OF COWORKING SPACE WORLDWIDE



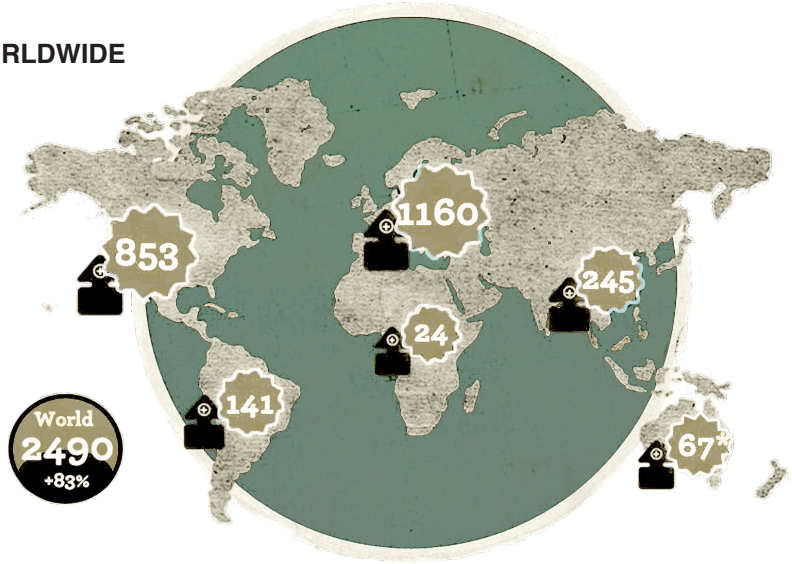
2011-2012-2013

>100 000 MEMBERS IN COWORKING SPACE WORLDWIDE



FEB 2013

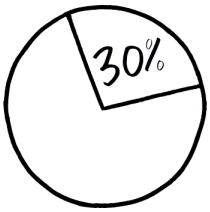
2500 OF COWORKING SPACE WORLDWIDE



WHY COWORKING?

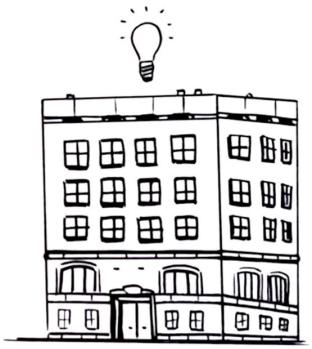
400%
growth in past years

32-35 MILLION
INDEPENDENT WORKERS



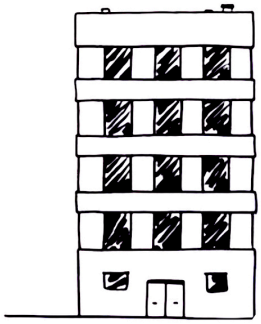
THE U.S. PRIVATE WORKERS

CONSTANT GROWTH IN THE WORLD



COWORKING SPACES

- **CONNECTEDNESS**
- exchange of ideas
- shared offices
- good coffee
- social life
- business relationships

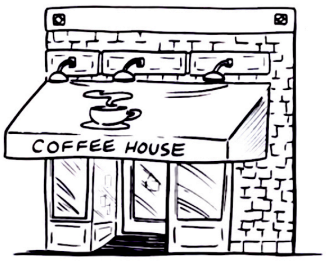


CORPARATE SETTINGS

- high price
- crowdedness
- 20 - 50 m2

HOME OFFICES

- integration of work and life
- 90% of freelancers
- lack of social life
- loneliness
- slower business grow
- life destructions



COFFEE SHOPS

- free Wi-Fi
- good coffee
- lack of privacy
- noise
- only 2% of freelancers

COWORKERS QUESTIONARY

Coworkers	1. Few reasons that pushed you to became a coworker.	2. Few criteria you have used to choose the coworking place.	3. Had the quality of your work increased after becoming coworker? Why? What are improved features.	4. What are the benefits of coworking?
Annis Lender - Architect, Moscow, Russia	- I used coworking because i like to change working place and environment and to stay adaptive to any situation.	- I like to be in sorounding of active and open minded peopler who are alwayse opened for conversation or something new and new ideas. - In cooworking I used printer, Wi-Fi, kitchen.	- Yes. More new ideas after conversation with other cooworkers.	- Easy access by car and free parking.
Nadezhda - Real Estate, Moscow, Russia	-Nice interior and responsive people	-Possibility to work non stop day and night	-Plusses and minuses: the environment improved workability, but distance from subway made a problem to meet clients.	
Anastasia Muravieva - Designer/ Decorator, Moscow, Russia	-Low price, cheaper than regular office	- Nice environment. Pleasant working place. - Meeting rooms where to receive customers, and event rooms for workshops.	-Yes. Increased workflow speed and effectiveness.	-Easy access in the city. New good contacts. Information about trainings, courses or maser-classes.
Olga Tokovaya - Photo artist, Barcelona, Spain	-Low price and not regular payment	-Place to meet clients, office equipment, working place	-More clients thanks to solidity, the motivation thanks to communicating with colleagues, the opportunity to reach a new level.	-Easy access in a city center.
Daria Yermolaieva - Architect, Kharkov, Ukrain	-Low price and not regular payment	-Unlimited working time	-Yes. Good advices by other coworkers, increased productivity.	
Denis Samoilov - Graphic designer, Lloret de Mar, Spain	- rents only on those days when you need an office; - no cost for furniture and office maintenance; - available 7 days a week.	- low cost; - location close to the subway or public transport; - availability of parking; - additional services (congress hall, gym).	- no, but lower costs.	
Anna Peven - Administrator, Moscow, Russia	- The relative freedom of movement - independent working place - clear time schedule of work	- the city center or a place close to home - available printer and coffee - comfortable, creative atmosphere	- Yes, thanks to availability of all necessary stuff.	- The possibility of merging all, one and all under one roof
Anastasia Fedchenko - Photo artisr, Lloret de Mar, Spain	- Possibility to get out from home - to work in creative groups - opportunity to establish new business contacts, meet new interesting and useful people - increase productivity, - low price comparing to regular office	- Convenient location - bright and cozy room - additional services	- Focus on work - the opportunity to enhance knowledge thanks t lectures and master classes	- Coworking is good for startups and freelancers who have no money to rent an office, good place to meet with customers or clients. - Coworking also is a good option for travelers who arrive to a foreign city for networking.
Evgeny Schelkanov - Social Media Marketing, Torrevjeha, Spain	- Low price - creative environment	- The location - service (cafe, internet, gym, garden), - costs	- Yes, the working atmosphere motivates to work	- Economy - Meet new people - Prospects for further development

FACTS ABOUT SHIPPING CONTAINERS

NEW ARCHITECTURE WITH OLD CARGO CONTAINERS

There are countless numbers of empty, unused shipping containers around the world just sitting on shipping docks taking up space. The result is an extremely high surplus of empty shipping containers that are waiting to be made into your next home.

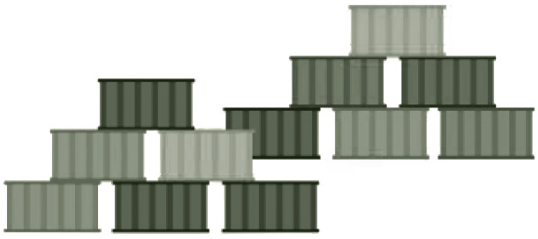
THE CARGO CONTAINER'S LIFE-CYCLE

The U.S. military started developing and using shipping containers in the 1950s.

Shipping containers typically have a useful life of 10-15 years in the shipping industry.

Shipping containers are made of heavy gauge Cor-Ten steel and are designed for a 69,399 kg vertical load.

A container has 3,629 kg of steel which takes 8,000 kWh (28,800 MJ) of energy to melt down.



There are approximately 18 million containers in the world currently used for industry transport.

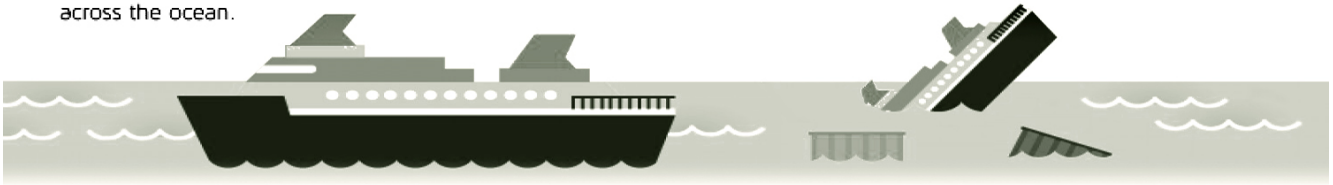
There are more than 300 million shipping containers sitting empty at ports around the world.

If all of the containers in the world were laid end to end they would circle the world more than twice.

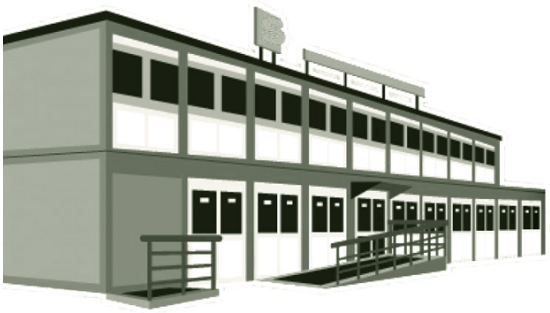
It's too expensive for a country to ship empty containers back to their origin. In most cases, it's just cheaper to buy new containers from Asia.

At any given time, between 5-6 million containers are in transit across the ocean.

An average of 675 containers are lost at sea each year.



FROM TRANSPORT TO LIVABLE ARCHITECTURE



PHILLIP C. CLARK ----------

Filed for a United States patent on November 23, 1987 described as "Method for converting one or more steel shipping containers into a habitable building..."

This patent was granted August 8, 1989 as patent 4854094. The diagrams and information contained within this patent appear to lay the groundwork for many current shipping container architectural ideas.

FACTS ABOUT SHIPPING CONTAINERS

PROS

Made for great strength and durability

Some storage units can be made earthquake, hurricane, fire and tornado resistant.

They provide modular elements

that can be combined into larger structures.

Low expenses

Overall it is still lower than conventional construction expenses (roughly 20% less).

Used shipping containers are available across the globe

Pre-fabricated modules can be easily transported by ship, truck or rail because they already conform to standard shipping sizes.

Storage containers can be purchased from major transport companies

for as little as € 1,000 each.
Even when purchased brand new they are seldom more than € 6,000.

CONS

Containers used for human occupancy

in an environment with extreme temperature variations will normally have to be better insulated than most brick, block or wood structures.

In temperate climates

moist interior air condenses against the steel. Rust will form unless the steel is well sealed and insulated.

The size and weight of the containers

will typically require them to be placed by crane or forklift.

Obtaining building permits

may be troublesome in some regions due to municipalities not having seen this application before.

Solvents released

from paint and sealants used in manufacture might be harmful.

THE IDEA OF BUILDING AHOUSE OUT OF SHIPPING CONTAINERS IS USUALLY NOT THE FIRST THING THAT COMES TO MIND. HOWEVER, CARGO CONTAINER ARCHITECTURE COULD LEAD TO OTHER WIDESPREAD ESES OF EMPTY CONTAINERS SUCH AS EMERGENCY HOUSING, TEMPORARY CONSTRUCTION OFFICES, AND INFILL HOUSES IN URBAN NEIGHBORHOODS.

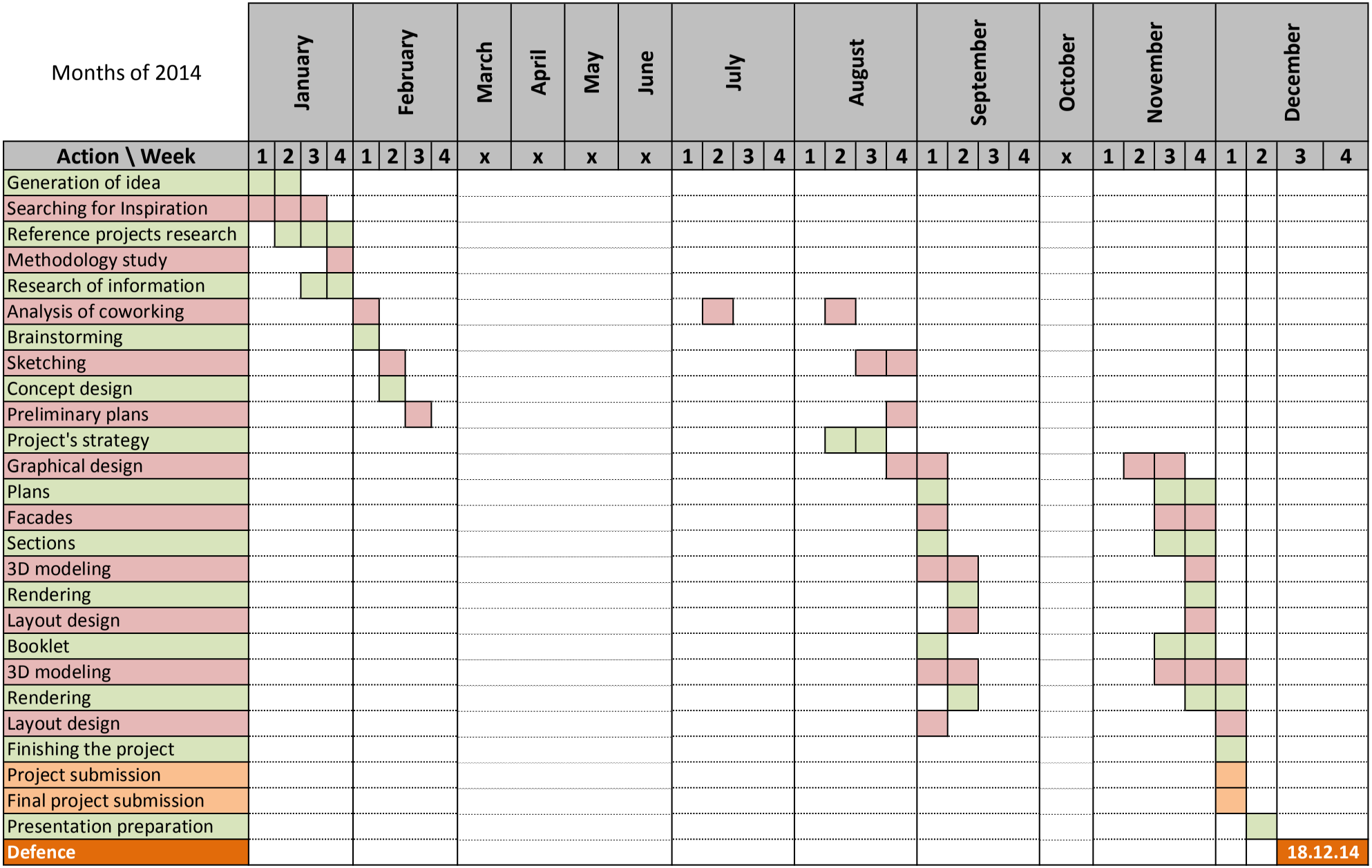
CONTAINER EXTERNAL DIMENSIONS

Tips	Augstums, mm	Platums, mm	Garums, mm
20' Dry Cube	2 591	2 438	6 058
20' High Cube	2 895	2 438	6 058
40' Dry Cube	2 591	2 438	12 192
40 ' High Cube	2 895	2 438	12 192
40' Pallet Wide	2 591	2 500	12 192

CONTAINER INTERNAL DIMENSIONS

Tips	Augstums, mm	Platums, mm	Garums, mm
20 ' Dry Cube	2 350	2 330	5 867
20' High Cube	2 566	2 330	5 867
40' Dry Cube	2 350	2 330	11 998
40' High Cube	2 566	2 330	11 998
40' Pallet Wide	2 381	2 440	11 998

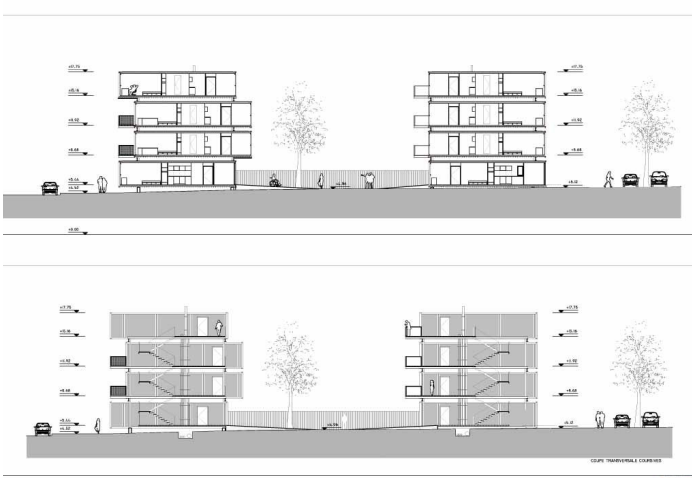
TIMETABLE

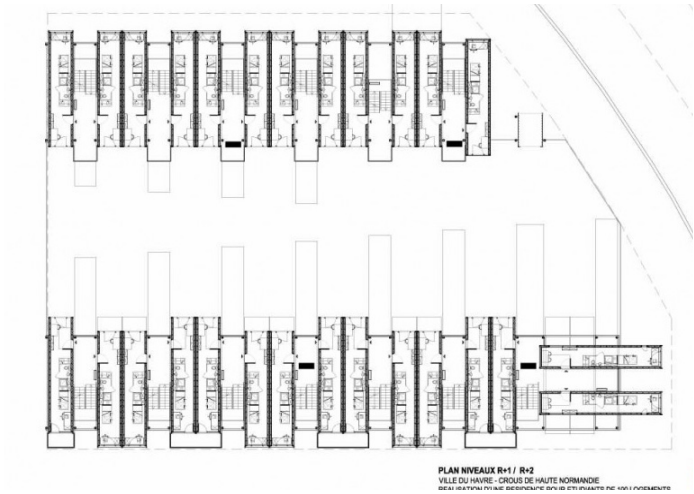

Months of 2014
January
February
March
April
May
June
July
August
September
October
November
December
Action \ Week
1 2 3 4 1 2 3 4 x x x x 1 2 3 4 1 2 3 4 1 2 3 4 x 1 2 3 4 1 2 3 4
Generation of idea
Searching for Inspiration
Reference projects research
Methodology study
Research of information
Analysis of coworking
Brainstorming
Sketching
Concept design
Preliminary plans
Project's strategy
Graphical design
Plans
Facades
Sections
3D modeling
Rendering
Layout design
Booklet
3D modeling
Rendering
Layout design
Finishing the project
Project submission
Final project submission
Presentation preparation
Defence
18.12.14

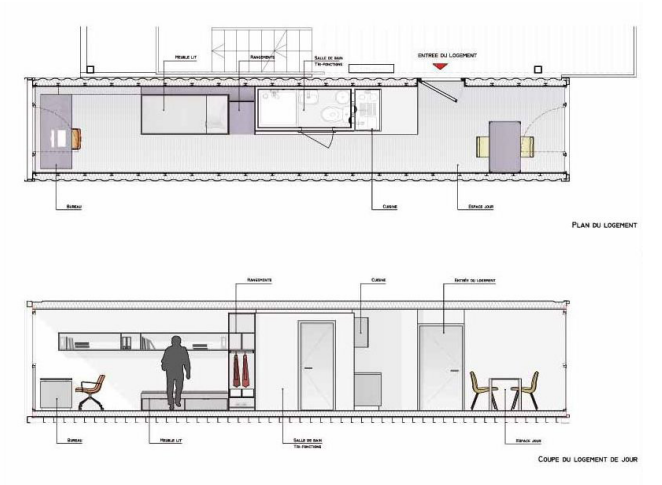
CASE STUDY

CASE STUDY OF REFERENCE PROJECTS

Cité A Docks Student Housing by Cattani Architects, Le Havre, France

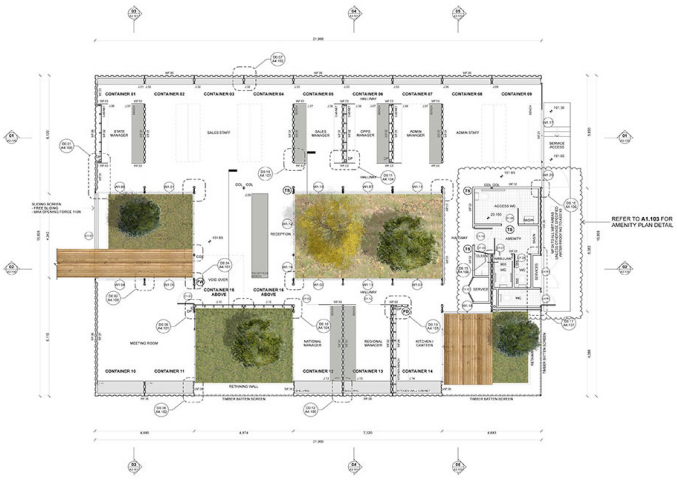






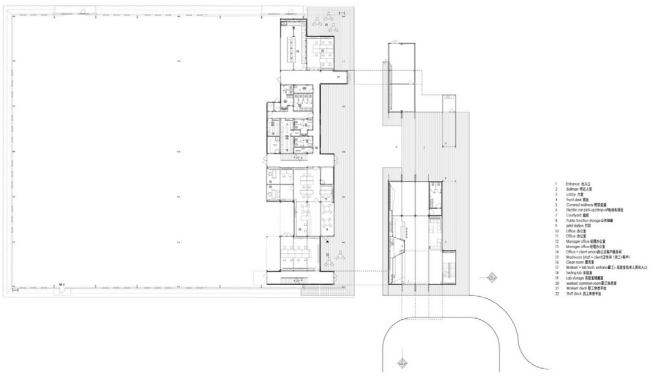
CASE STUDY OF REFERENCE PROJECTS

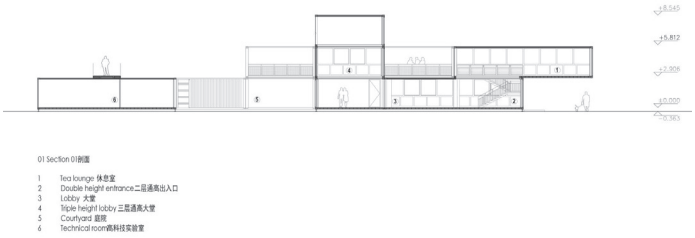
Royal Wolf - Melbourn HQ by ROOM11, Victoria, Australia



CASE STUDY OF REFERENCE PROJECTS

Tony's Organic Farm by Playze, Shanghai, China



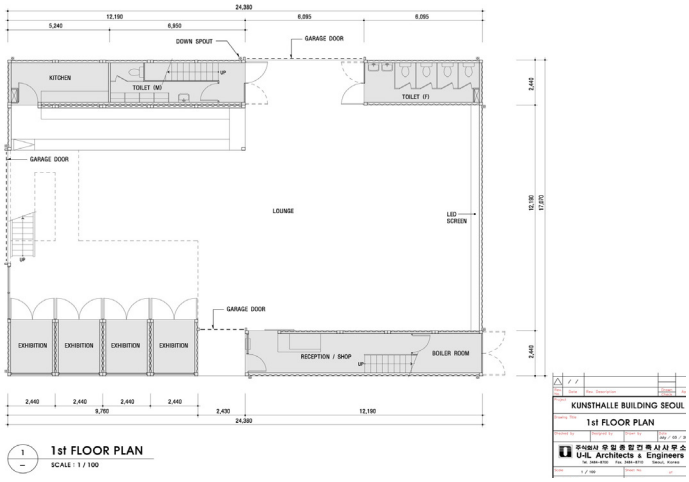


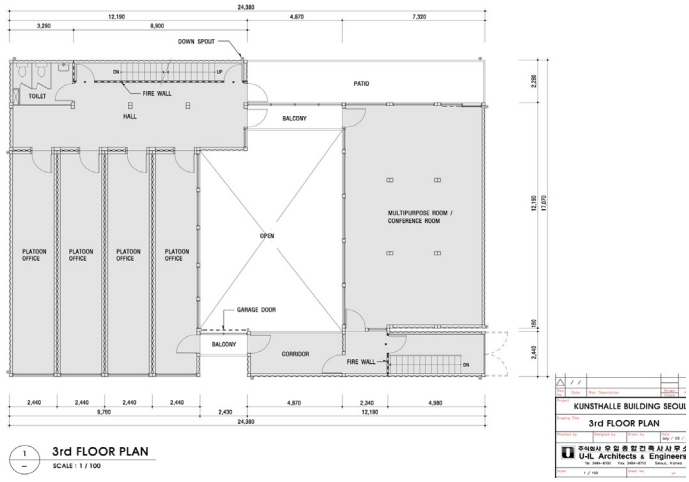
01 Section 01剖面

1 Tea lounge 休息室
2 Double height entrance二层通高出入口
3 Lobby 大堂
4 Triple height lobby 三层通高大堂
5 Courtyard 庭院
6 Technical room酒科技实验室

CASE STUDY OF REFERENCE PROJECTS

Platoon Kunsthalle / Platoon + Graft Architects, Seoul, South Korea





Genussregal - BWM Architekten & Partner, Austria

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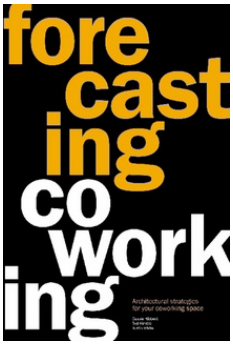

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   By Drew Jones, Todd Sundsted, Tony Bacigalupo

3. **Container Atlas: A Practical Guide to Container Architecture**
   by M. Buchmeier, H. Slawik, S. Tinney, J. Bergmann
   Die Gestalten Verlag (February 15, 2010)

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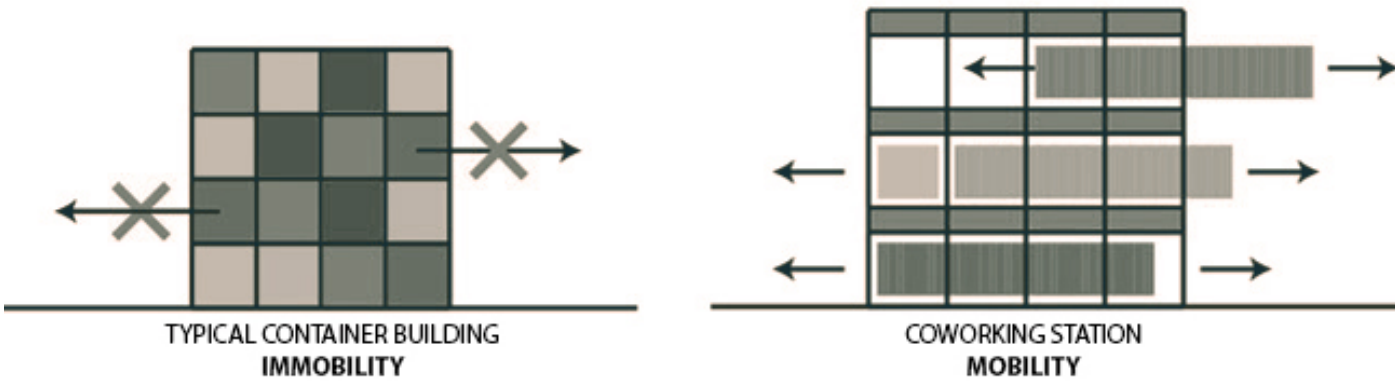
PROJECT

PROJECT LOCATIONS OPTIONS

	LONDON	BARCELONA	PARIS	MILAN	BERLIN	MOSCOW
	8 416 999	1 615 448	2 243 833	1 320 982	3 517 424	12 108 257
	Finance Education Tuourism	Art Tourism Textile	Finance Chemicals Restaurants	Finance Fashion Design	Science Media Music	Finance Media Machinery

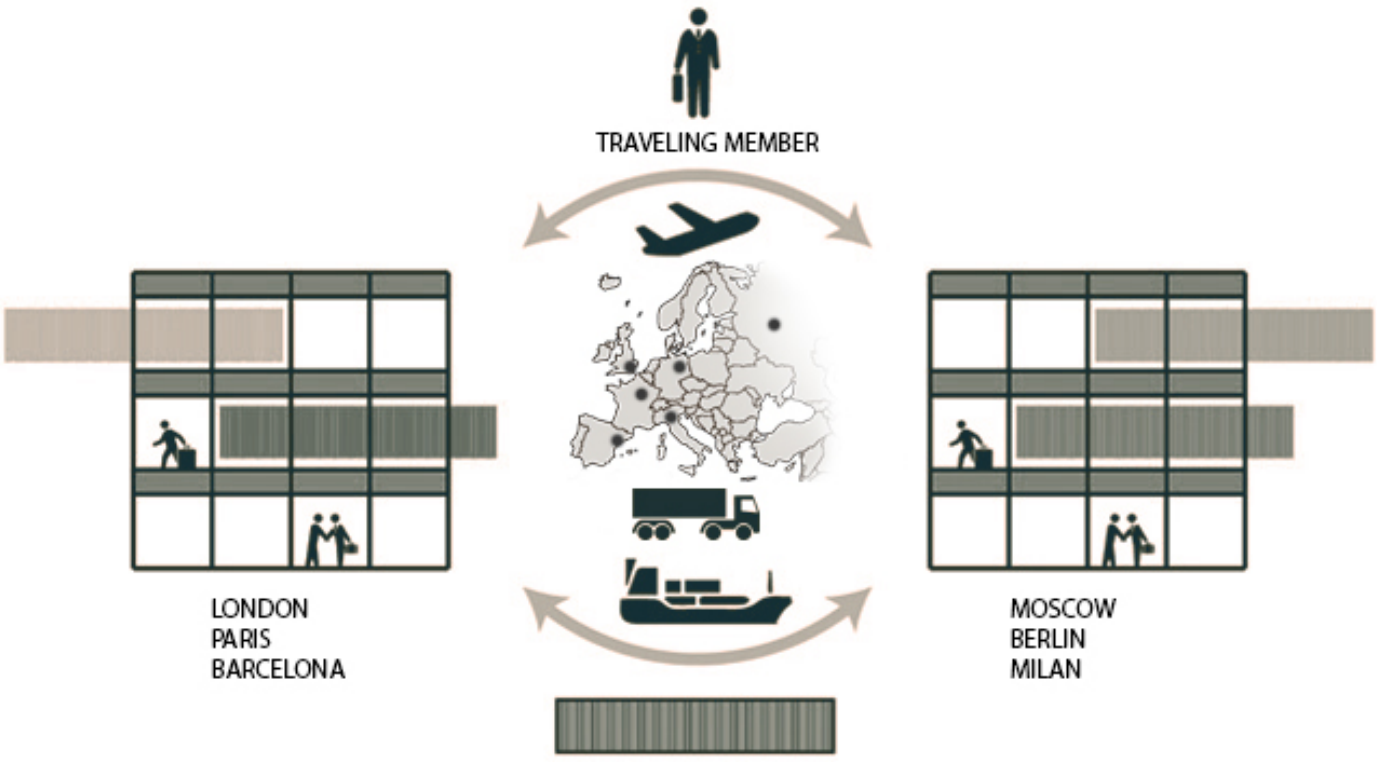
Megapolises are desired location for “MCS” project. Big cityes have synergy and atraction for creative people who are interestet in a spaces to express their ideas and colaborate with other minds. As well connection and economic relationship between megapolises plays a significant part of the “MCS’s” strategy.

STRATEGY

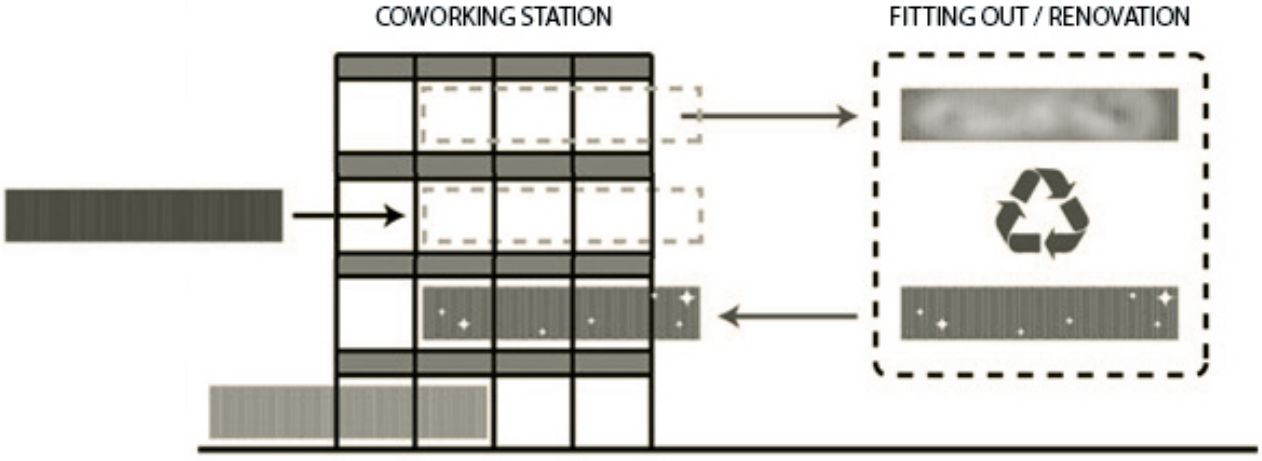


TYPICAL CONTAINER BUILDING
IMMOBILITY

COWORKING STATION
MOBILITY



PERSPECTIVE AND OPPORTUNITIES



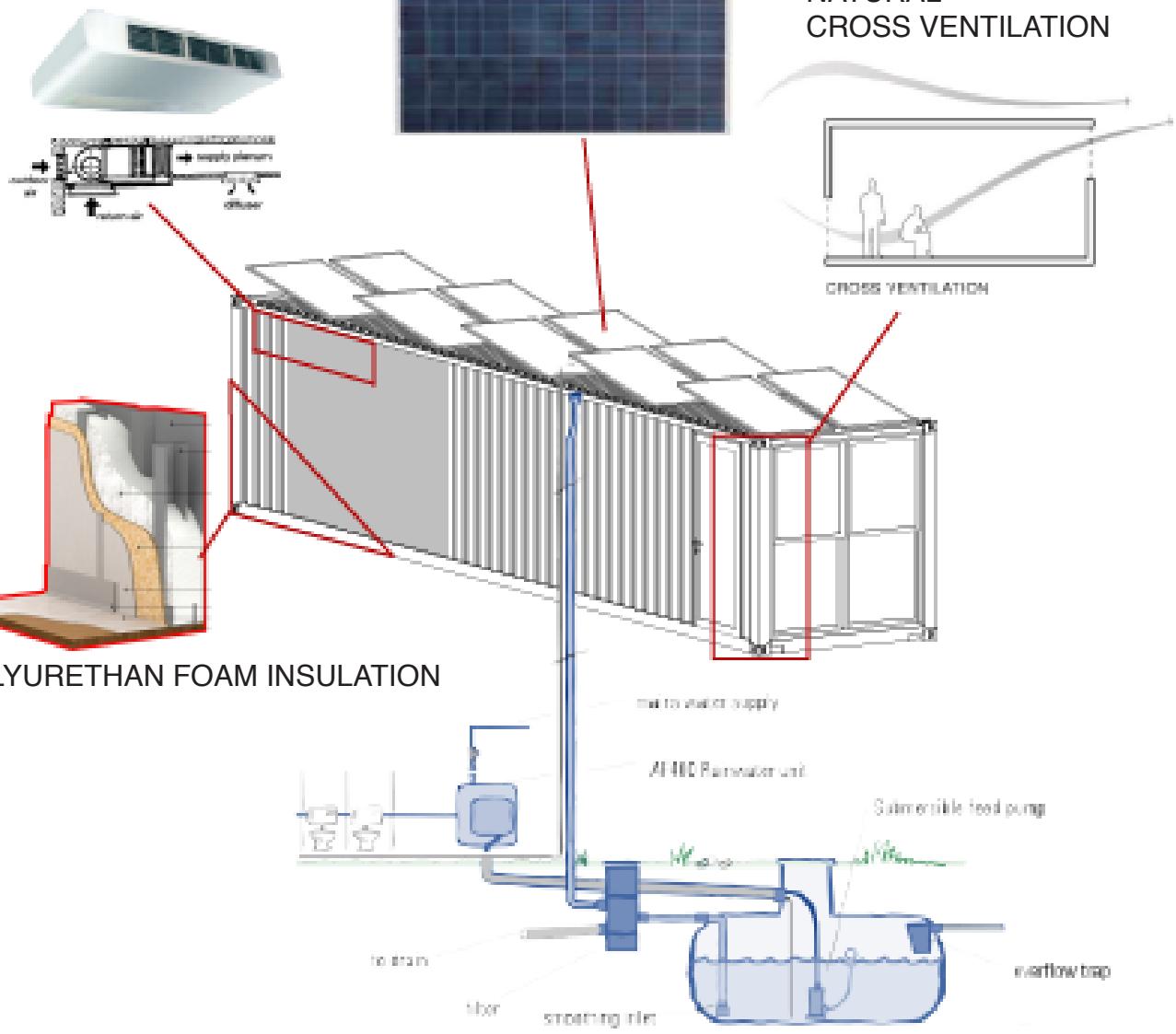
OFF-SITE FITTING OUT / MODULE MOBILITY / RENOVATION / MASS PRODUCTION
EASY MAINTANANCE AND SERVICE

MODULAR SUASTAINABILITY CONCEPT

PHOTOVOLTAIC
SOLAR PANELS

FAN COIL
MECHANICAL VENTILATION

NATURAL
CROSS VENTILATION

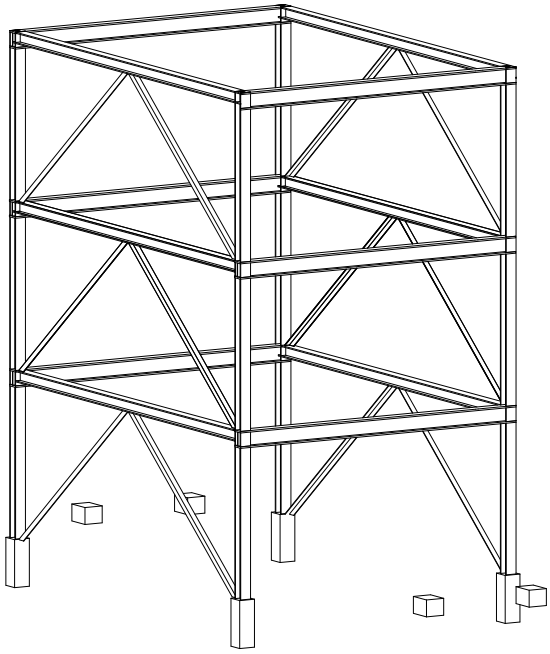


POLYURETHAN FOAM INSULATION

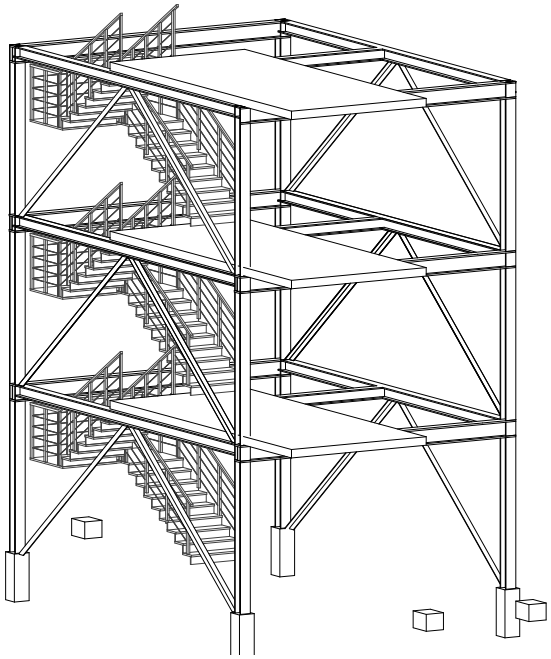
GREYWATER AND DRAINAGE SYSTEM

SEPARATE TEMPORARY STRUCTURE INSTALATION

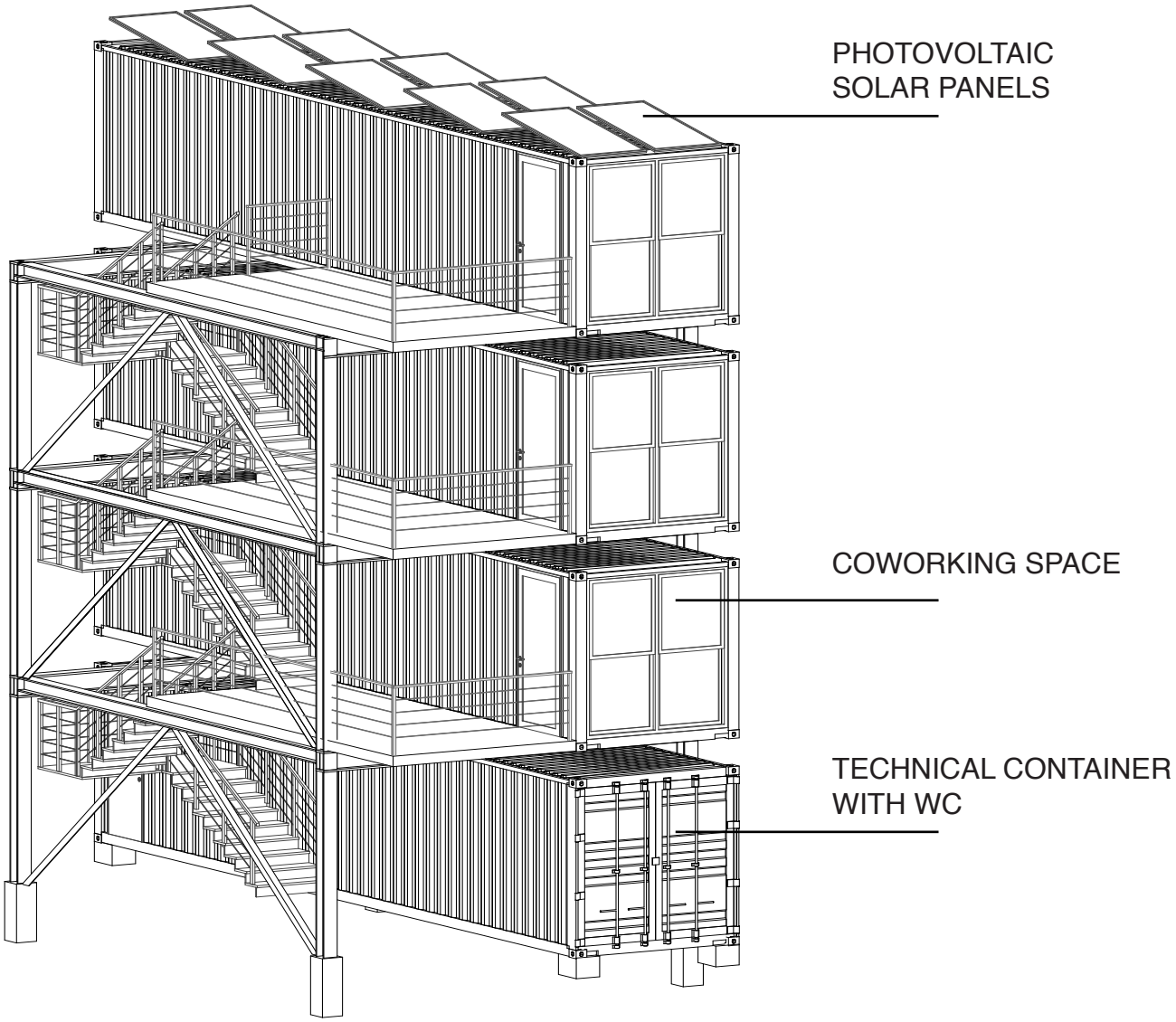
1. STEP - STEEL FRAME INSTALATION



2. STEP - STAIRS AND ACCESS BALCONIES

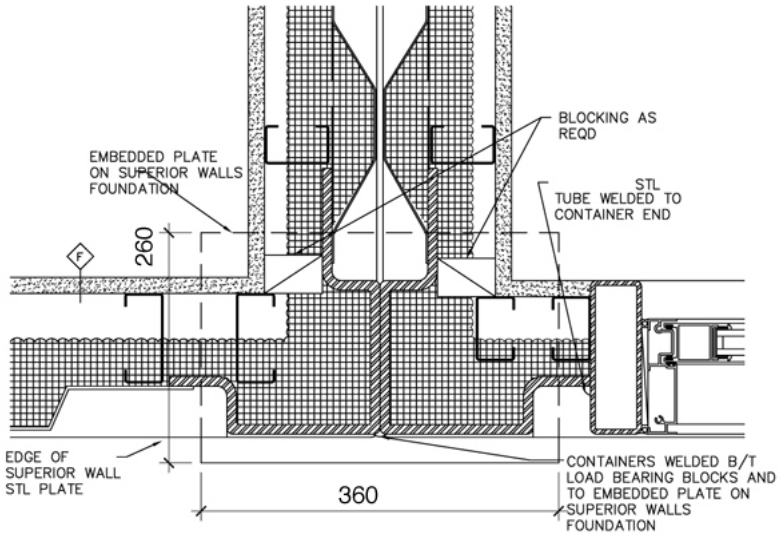


3. STEP - CONTAINER INSTALATION

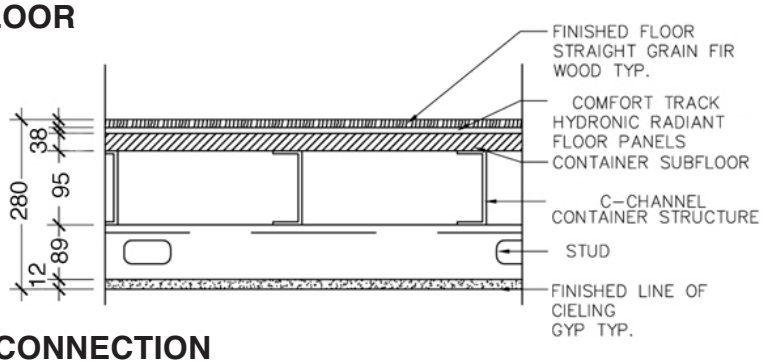


CONTAINER DETAILS

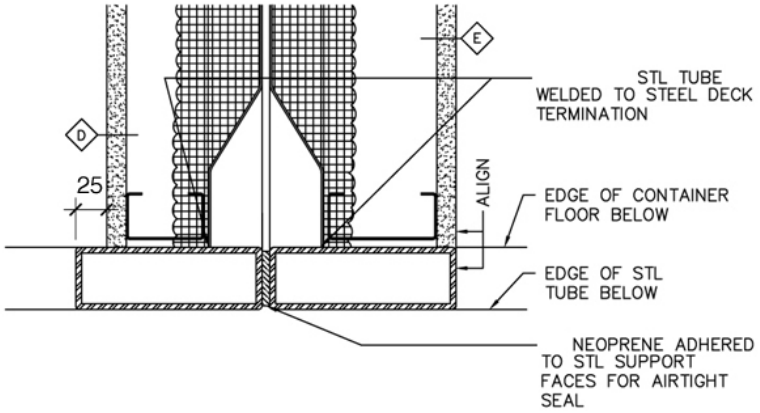
WINDOW'S CONNECTION WITH CONTAINER



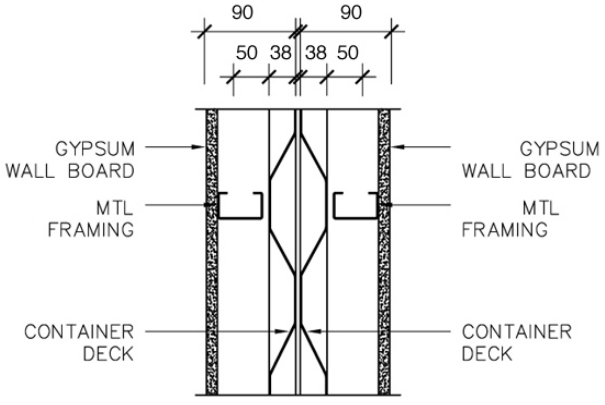
CONTAINER FLOOR



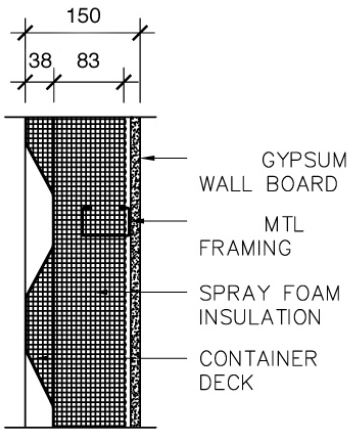
CONTAINER'S CONNECTION



INTERNAL WALL

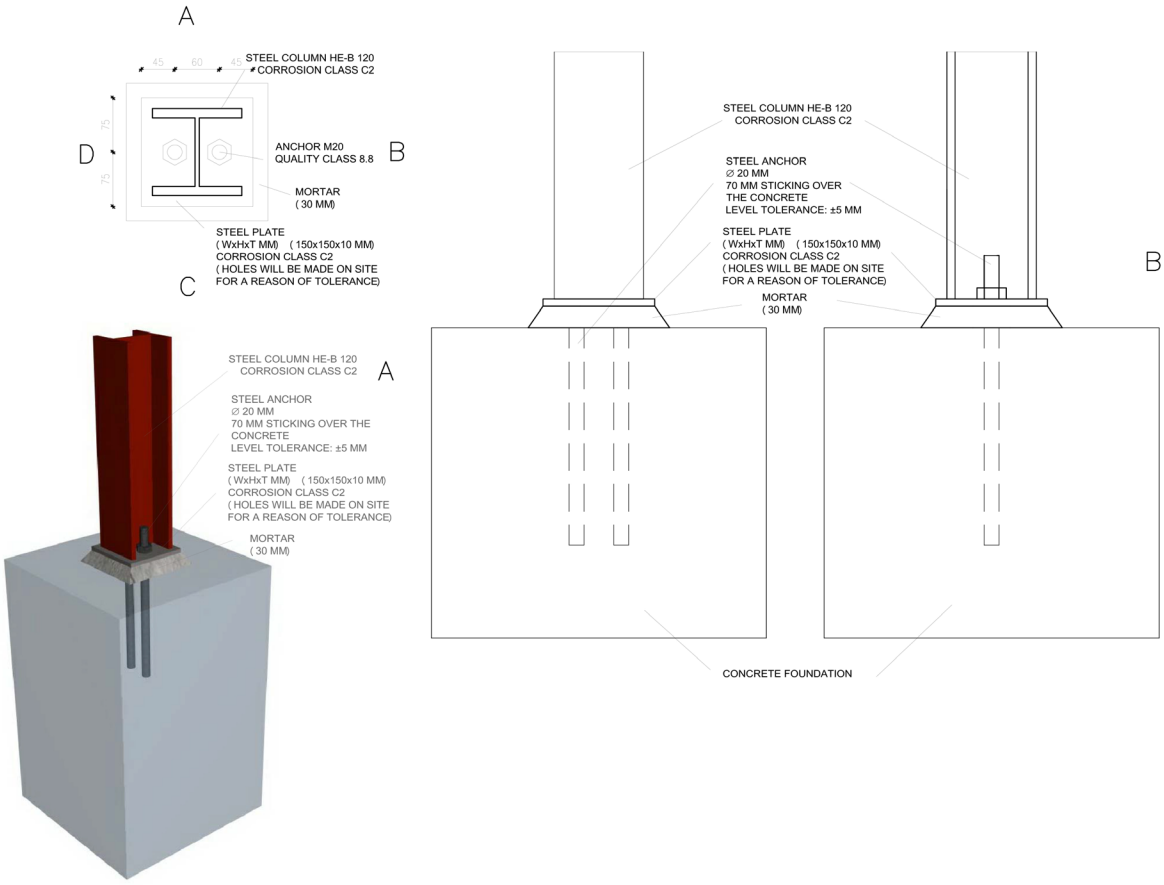


EXTERNAL WALL



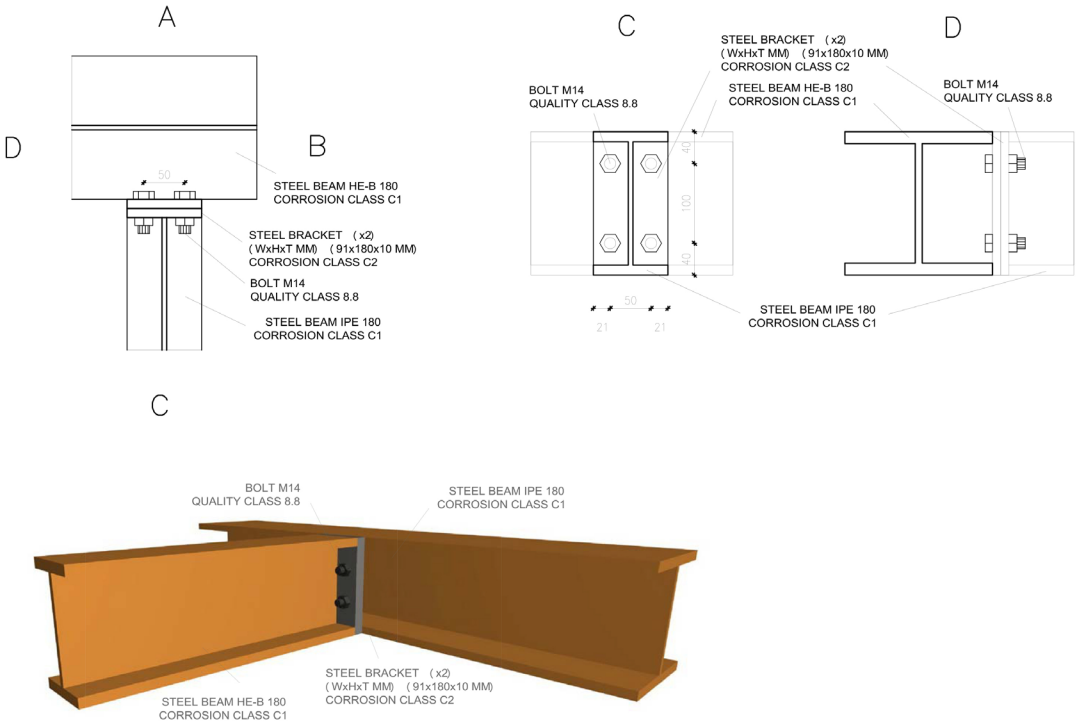
DETAILS OF SUPPORTING FRAME STUCTURE

STEEL FRAME / FOUNDATION DETAIL

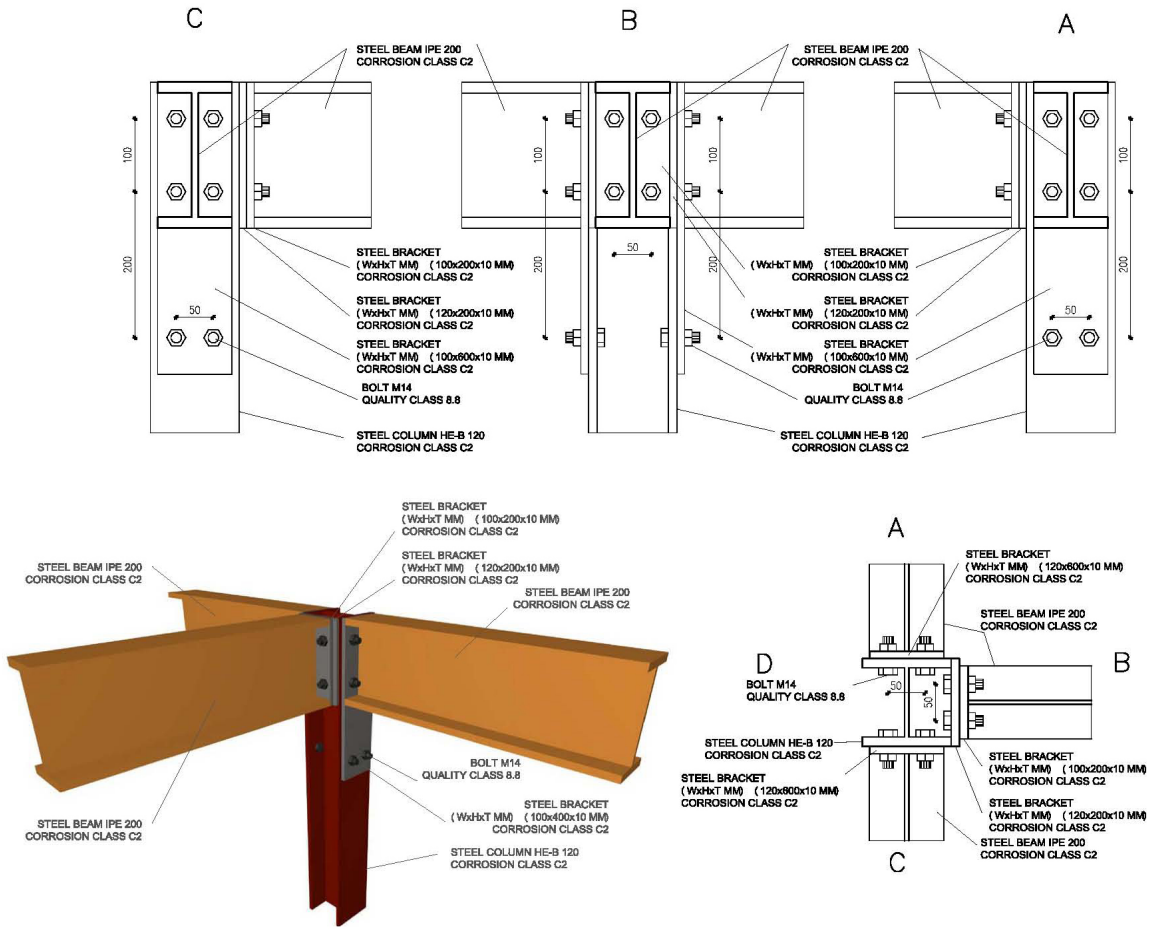


DETAILS OF SUPPORTING FRAME STUCTURE

STEEL FRAME BEAM TO BEAM CONNECTION

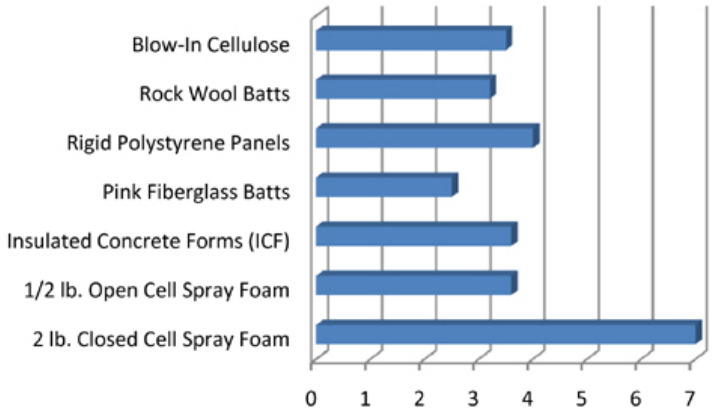


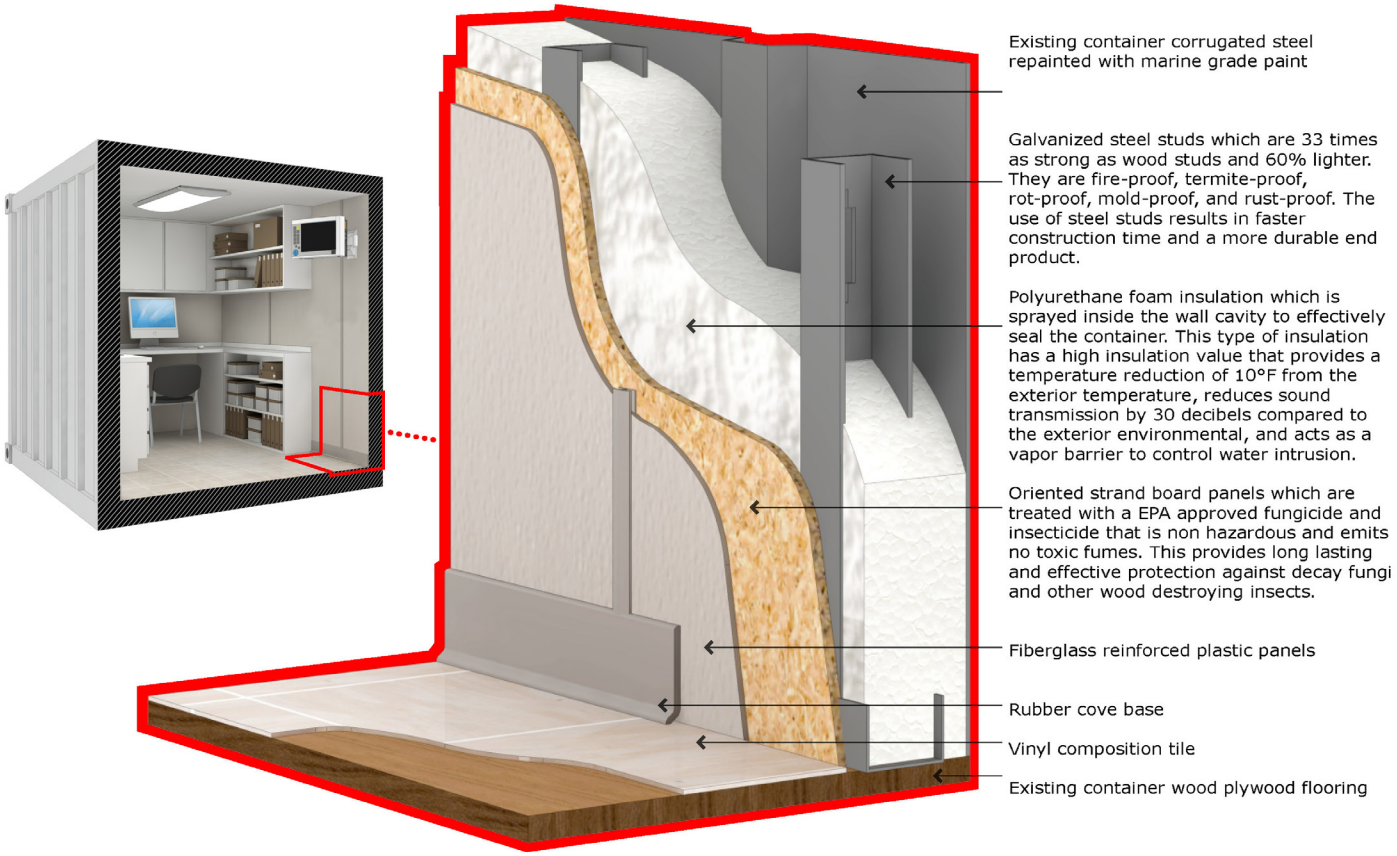
STEEL FRAME BEAM TO COLUMN CONNECTION

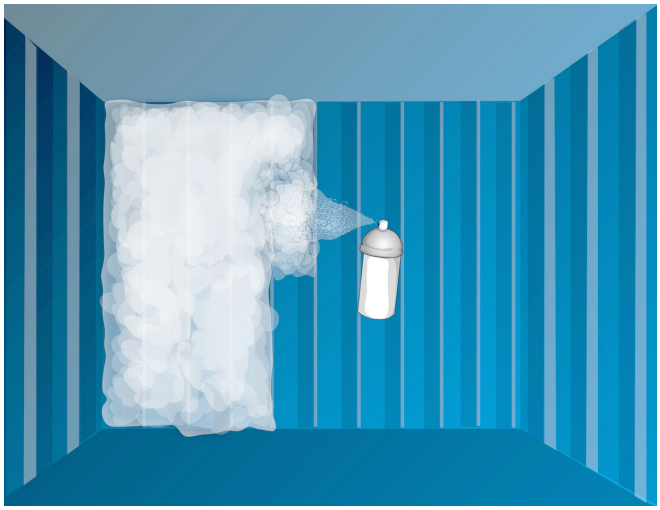


INSULATION

2 lb. Closed Cell Spray Foam has the highest R-Value as compared to all other types of available insulation products.

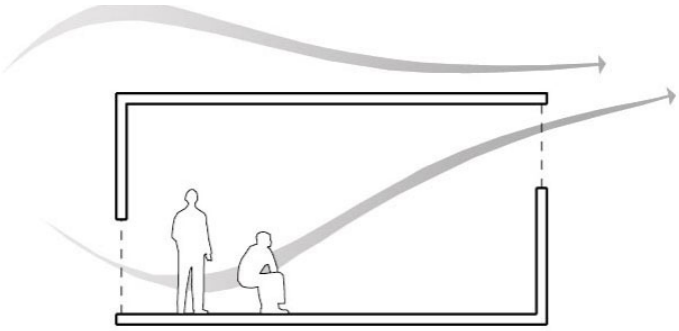




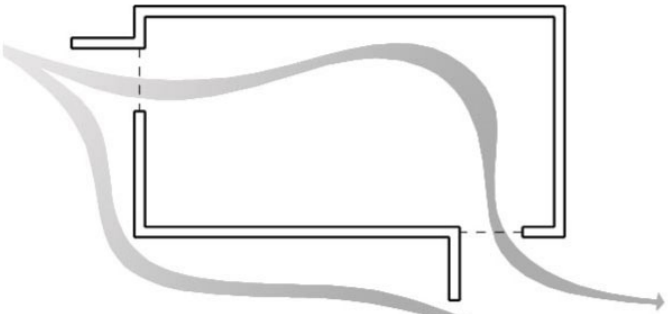


VENTILATION

NATURAL VENTILAvTION



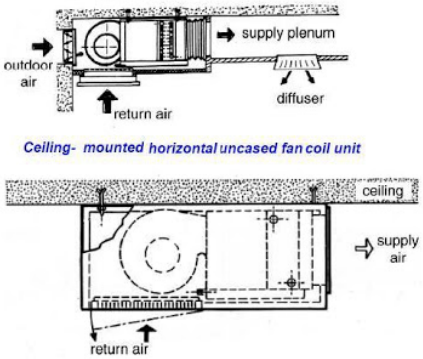
CROSS VENTILATION SECTION, maximum performance when inlet and outlet are placed at diagonal in both plan and section



CROSS VENTILATION PLAN, wind wall size should be .5 - 1 x width of window

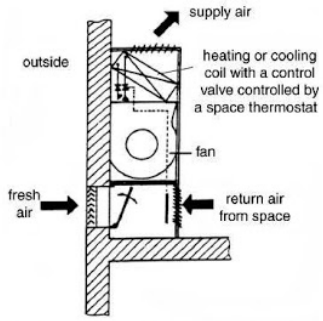
FAN COIL VENTILATION SYSTEM

To keep project mobile and modular, each container has its' own authonome ventilation system by fan cail.



Ceiling- mounted horizontal uncased fan coil unit

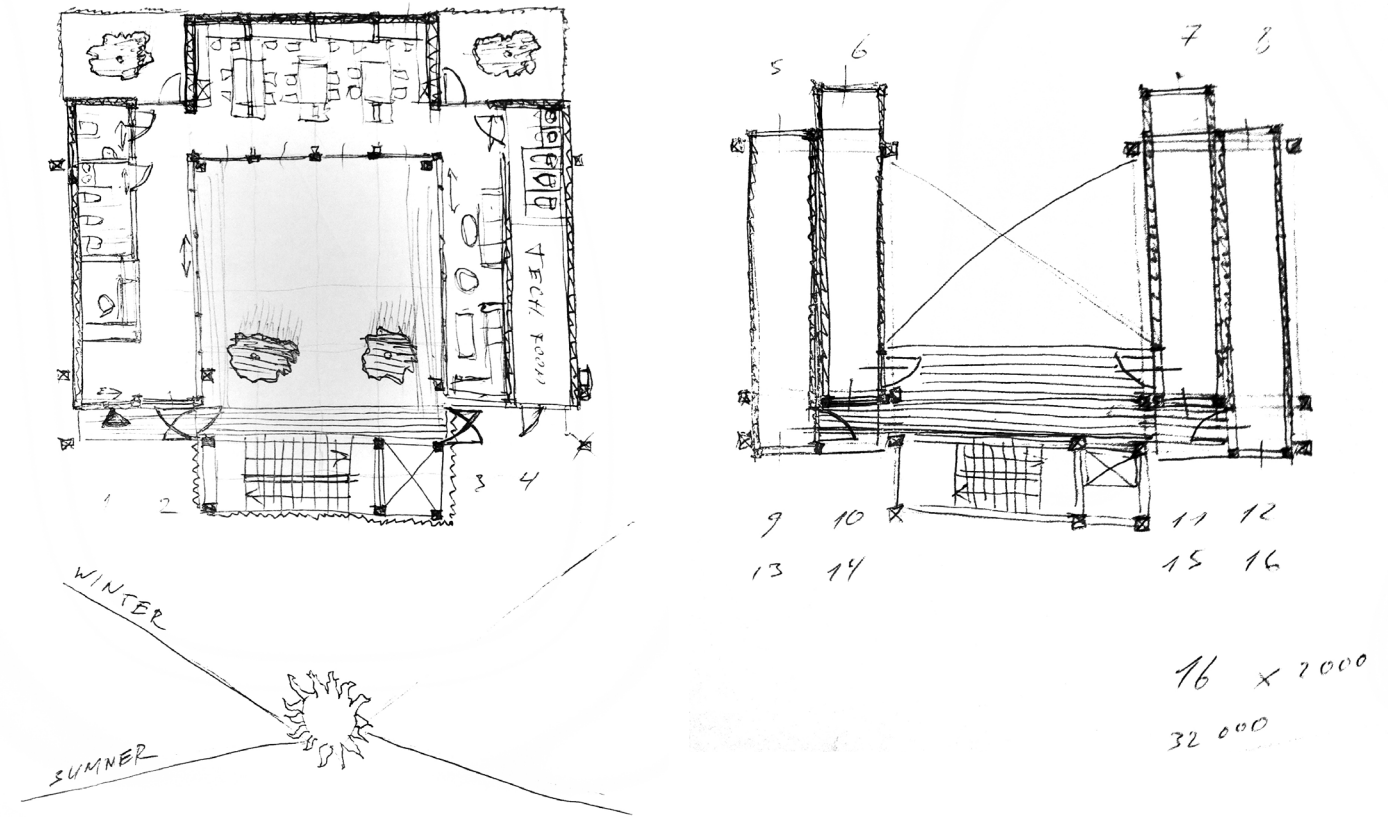
Horizontal cased fan coil unit



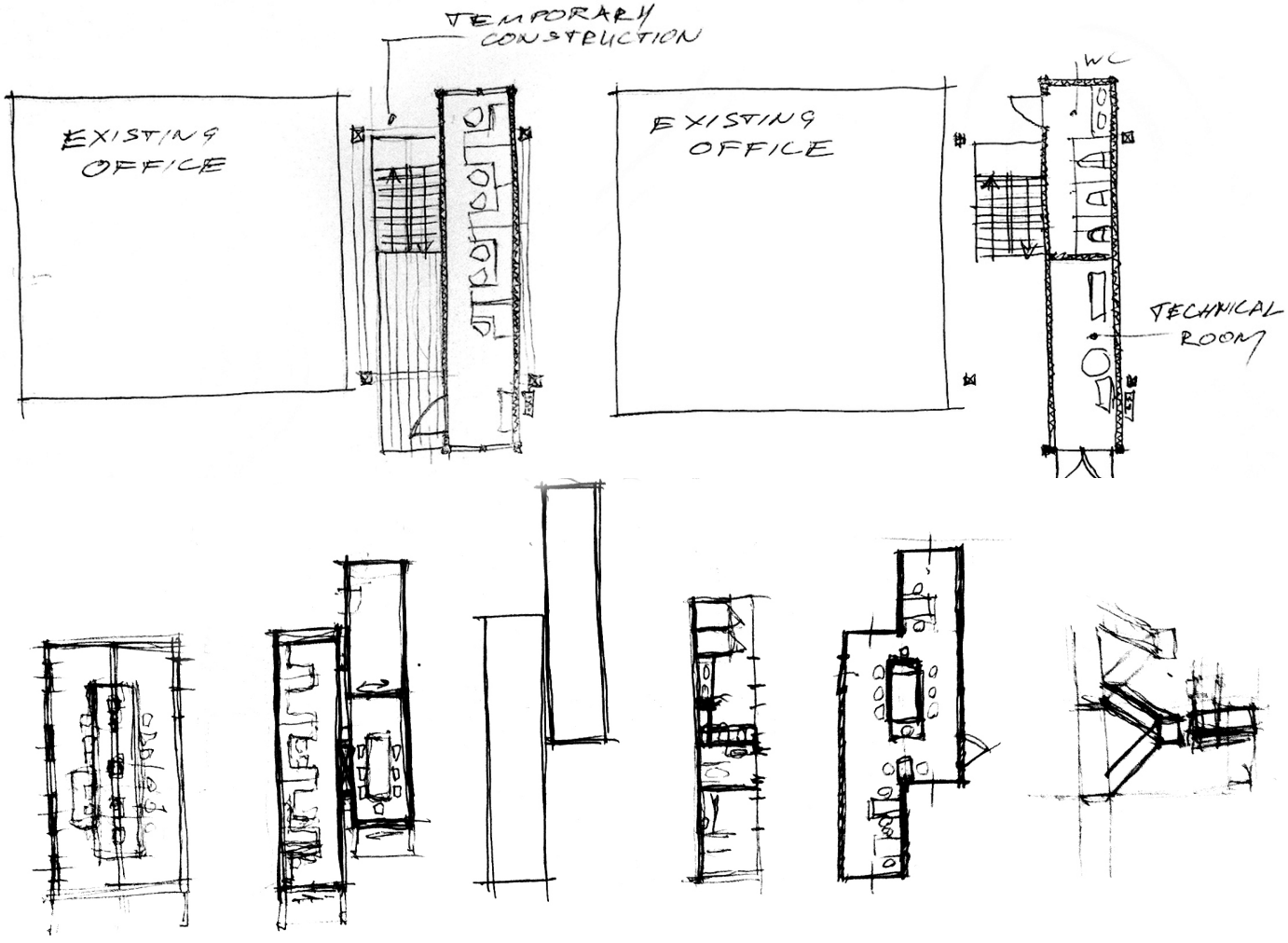
Vertical cased fan coil unit with fresh air inlet

SCETCHES

MAIN PROJECT CONCEPT



TEMPORARY STRUCTURE CONCEPT



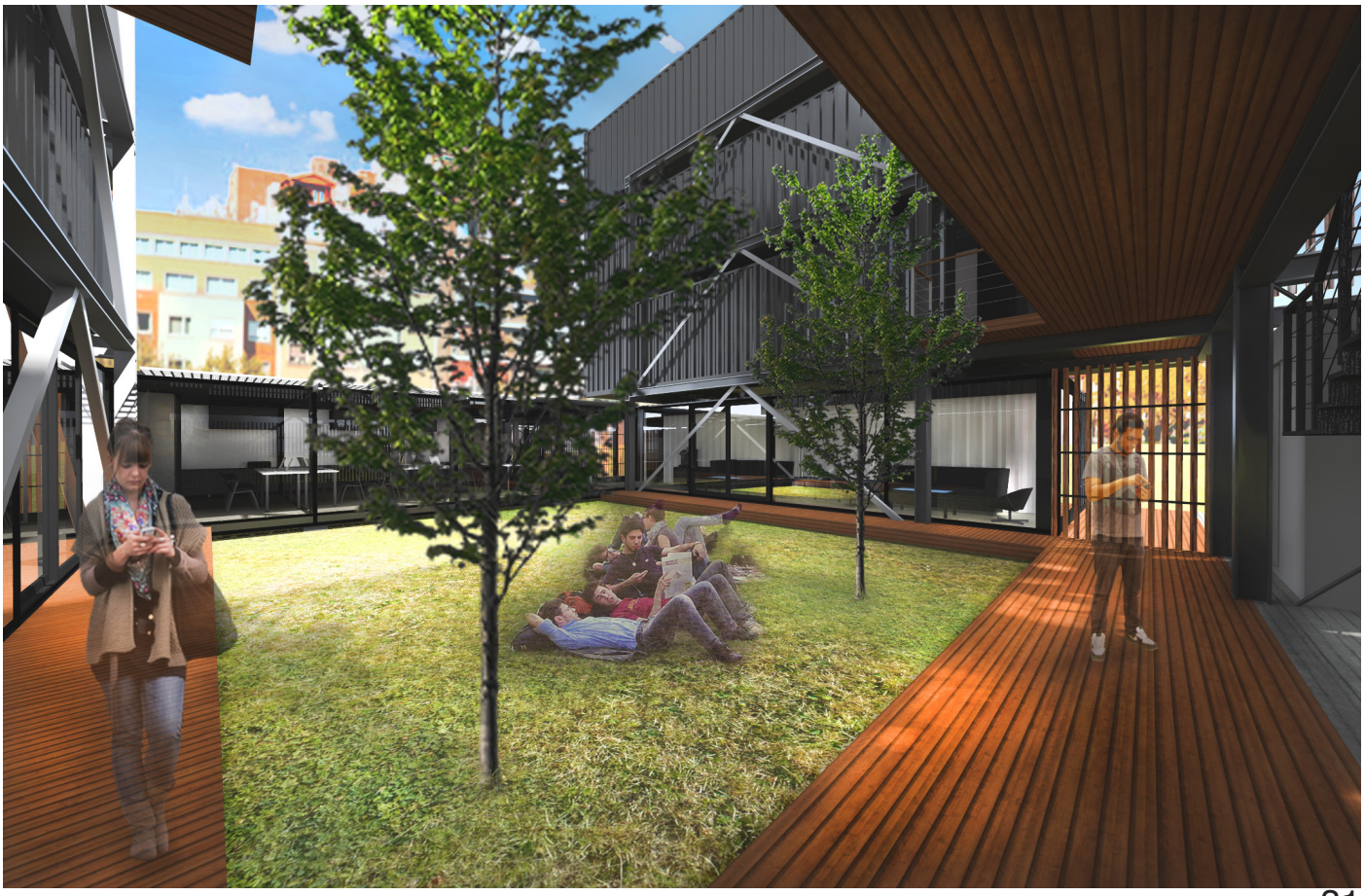
COSTS OF THE CONSTRUCTION

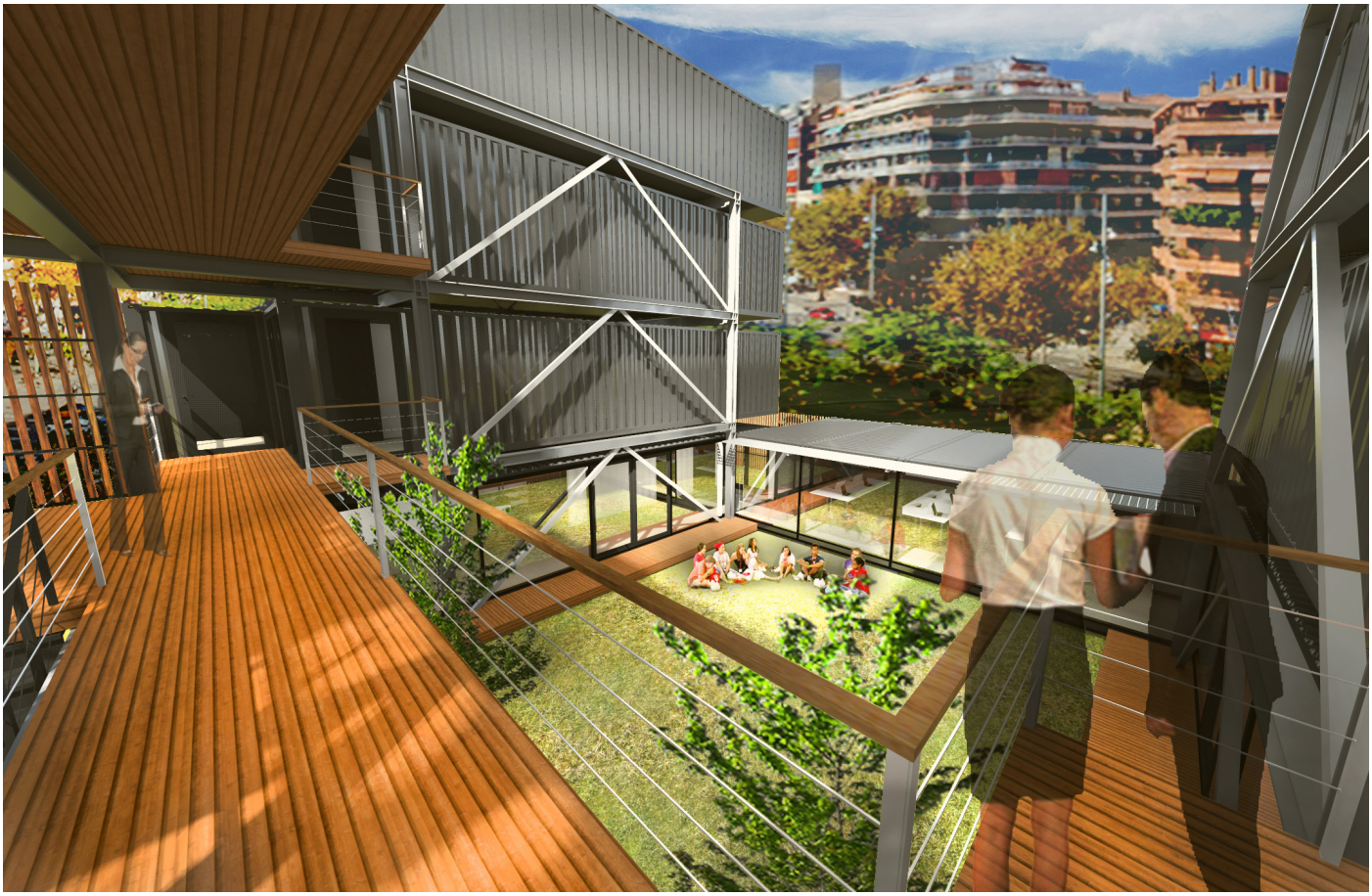
1ST CONCEPT EXPENCES

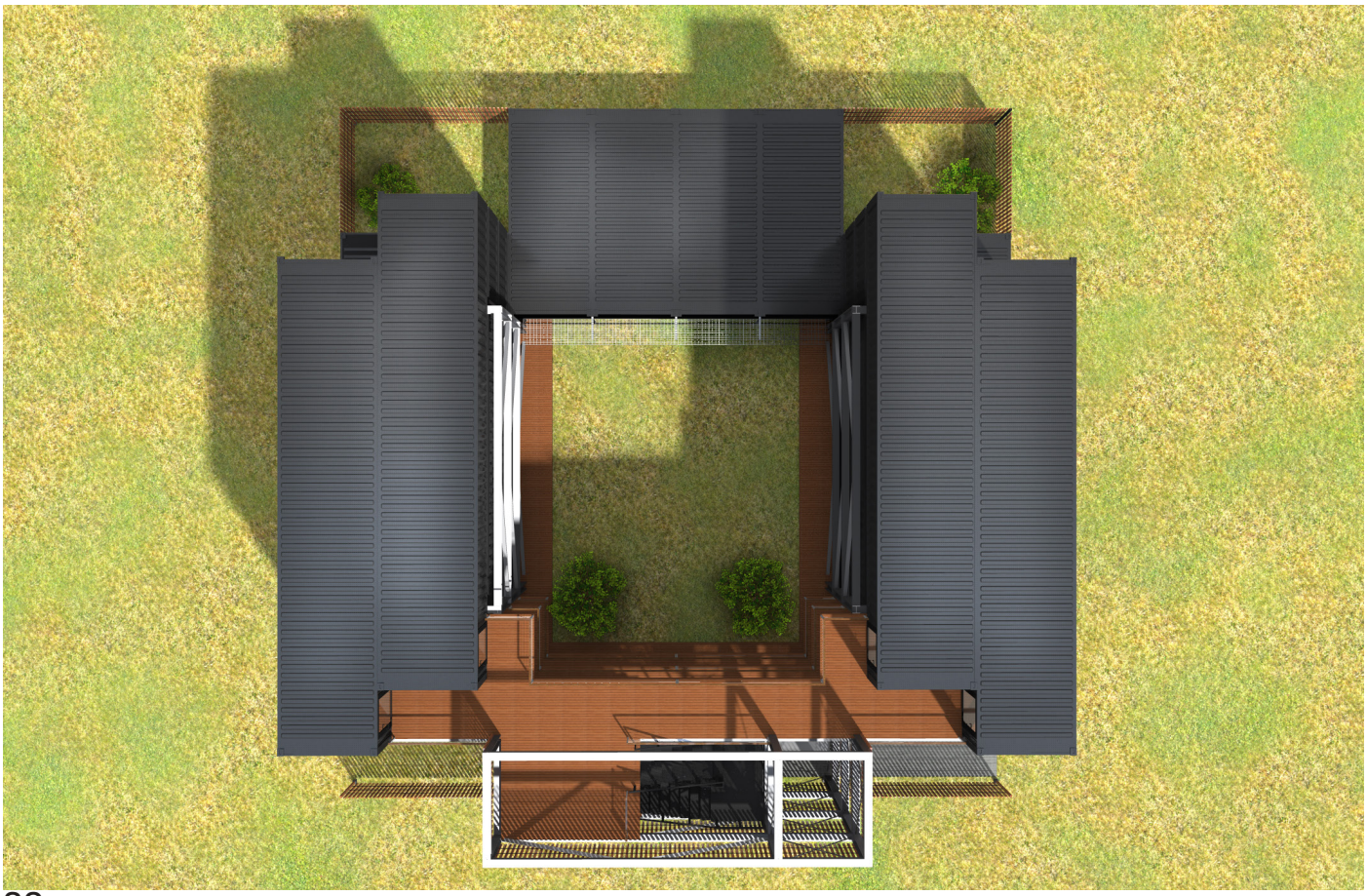
	units / m / m2 / h	EUR / unit	TOTAL EUR
SITE WORKS (m2)	400	10	4000
HEAVY TECHNIC (h)	28	40	1120
CONTAINERS (12 m)	16	1000	16000
CONTAINERS (6 m)	4	600	2400
STEEL PROFILES (m)	460	25	11500
METAL STRUCTURE (m)	140	10	1400
GLAZING	76	700	53200
INTERIOR FINISHING (m2)	520	15	7800
EXTERIOR FINISHING (m2)	200	10	2000
ELEVATOR	1	15000	15000
STAIRS	3	1000	3000
SOLAR PANELS	40	300	12000
VENTILATION (FAN COIL)	12	300	3600
TECHNICAL EQUIPMENT			8000
OTHER			15000
TOTAL PRICE			**156020**

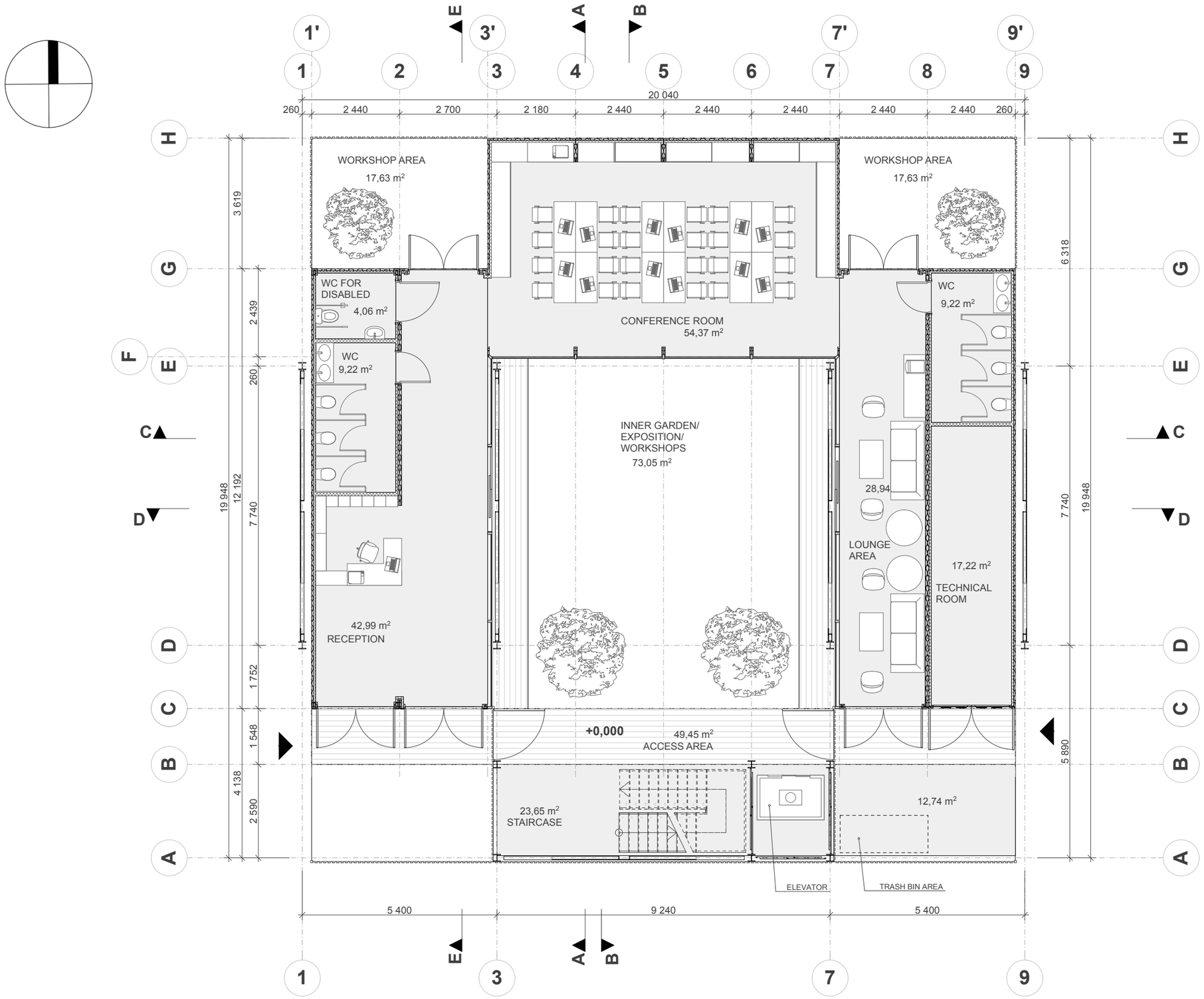
TEMPORARY BLOCK EXPENCES

	units / m / m2 / h	EUR / unit	TOTAL EUR
SITE WORKS (m2)	70	10	700
HEAVY TECHNIC (h)	14	40	560
CONTAINERS (12 m)	4	1000	4000
STEEL PROFILES (m)	75	25	1875
METAL STRUCTURE (m)	140	10	1400
GLAZING	6	700	4200
INTERIOR FINISHING (m2)	120	15	1800
EXTERIOR FINISHING (m2)	40	10	400
STAIRS	3	1000	3000
SOLAR PANELS	10	300	3000
VENTILATION (FAN COIL)	3	300	900
TECHNICAL EQUIPMENT			4000
OTHER			8000
TOTAL PRICE			**33835**









	NAME	SIGN
POSITION		
M. ARCH.	ALEKSANDR CETVERIK	
PROFESSOR	JOSEPH DI PASQUALE	
CLIENT	POLITECNICO DI MILANO	

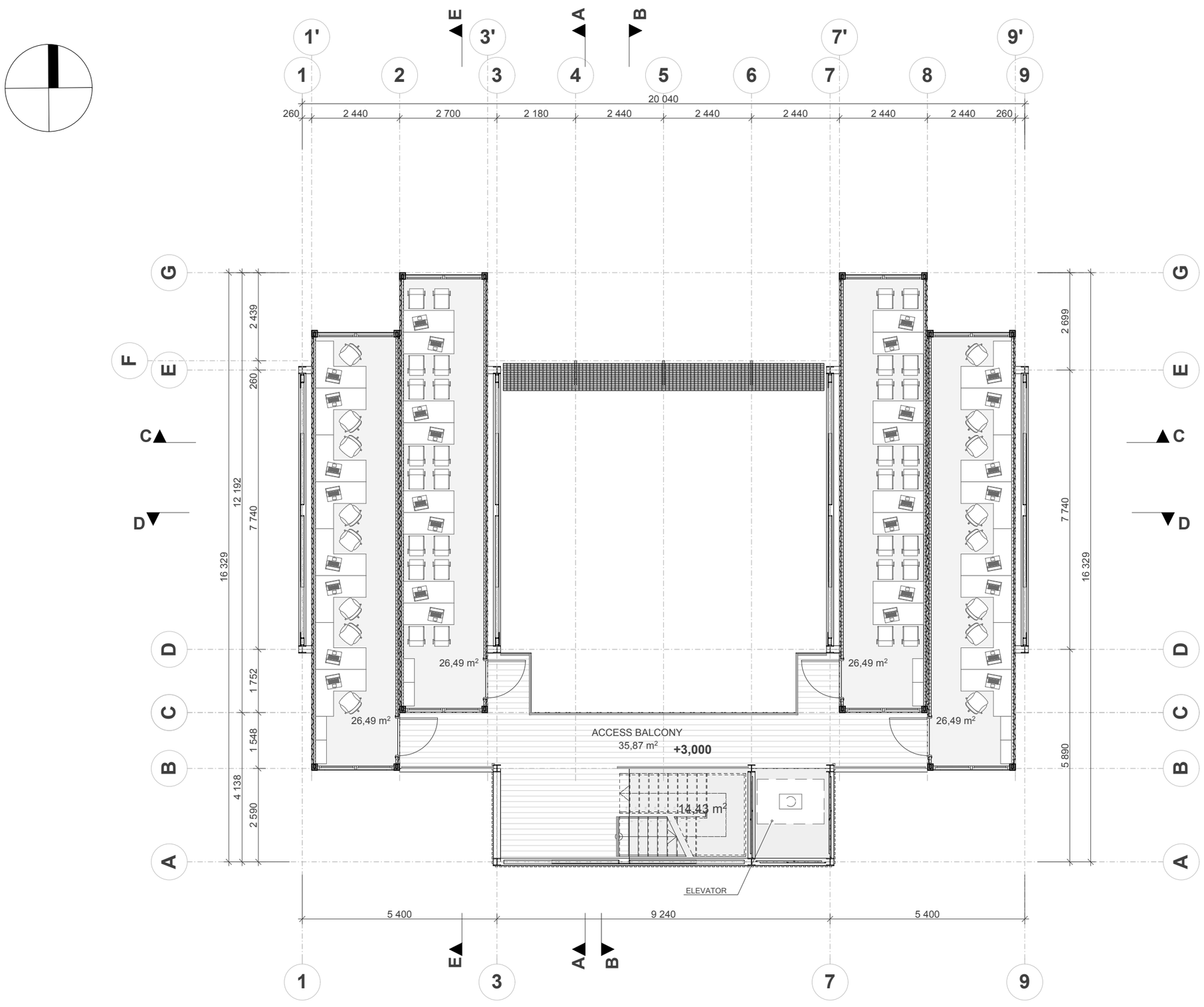
MODULAR COWORKING STATION

0 FLOOR PLAN

DATE	STAGE	SHEET	TOTAL
05.12.14	DRAFT		

GROUND FLOOR PLAN

TOTAL FLOOR AREA:	400 m²
INTERNAL SPACES:	166 m²
OUTDOOR SPACES:	121 m²
ACCESS AREAS:	73,1 m²



	NAME	SIGN
POSITION		
M. ARCH.	ALEKSANDR CETVERIK	
PROFESSOR	JOSEPH DI PASQUALE	
CLIENT	POLITECNICO DI MILANO	

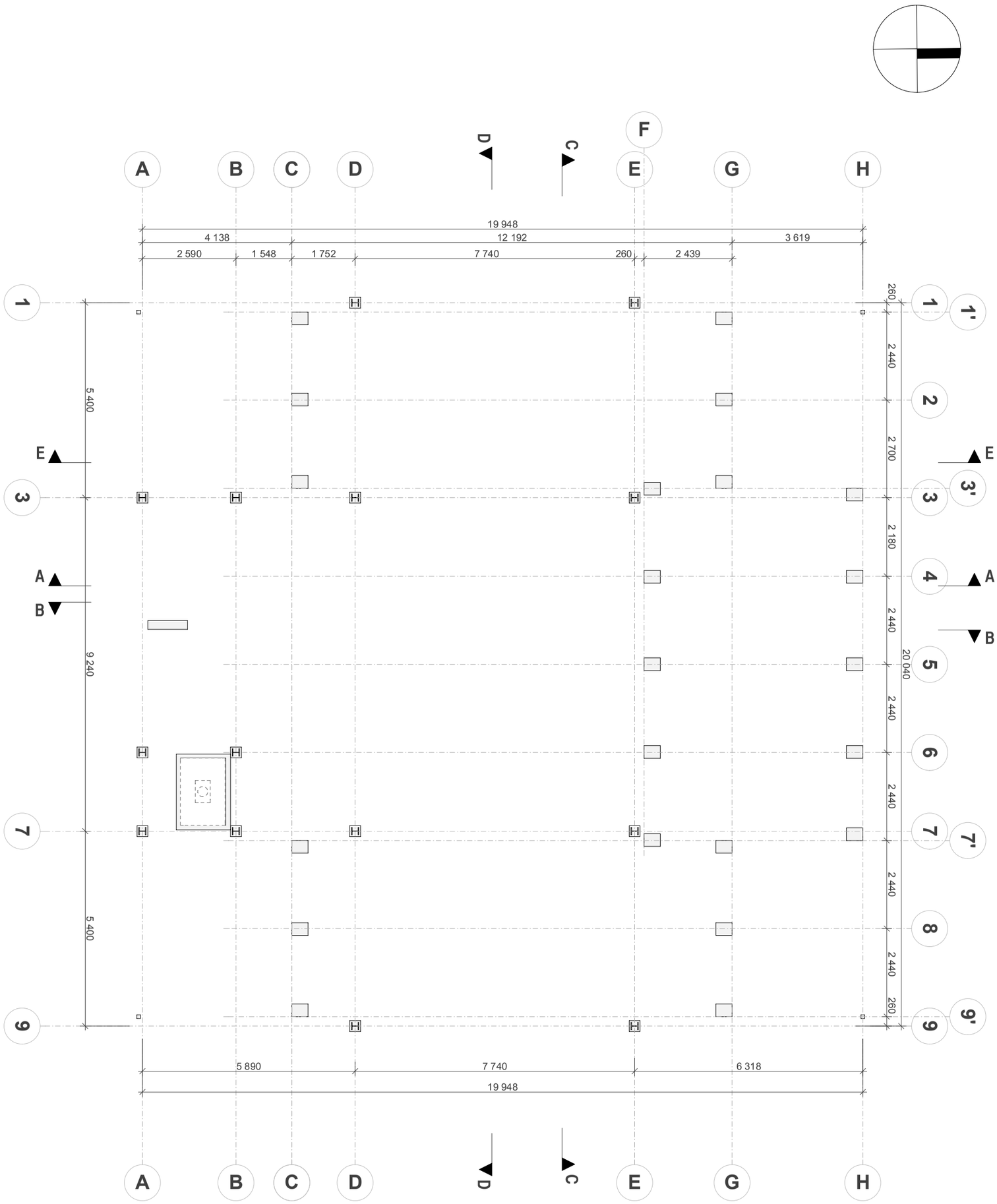
MODULAR COWORKING STATION

1 FLOOR PLAN

DATE	STAGE	SHEET	TOTAL
05.12.14	DRAFT		

1 FLOOR PLAN

TOTAL FLOOR AREA: 156,3 m²
INTERNAL SPACES: 106 m²
ACCESS AREAS: 50,3 m²



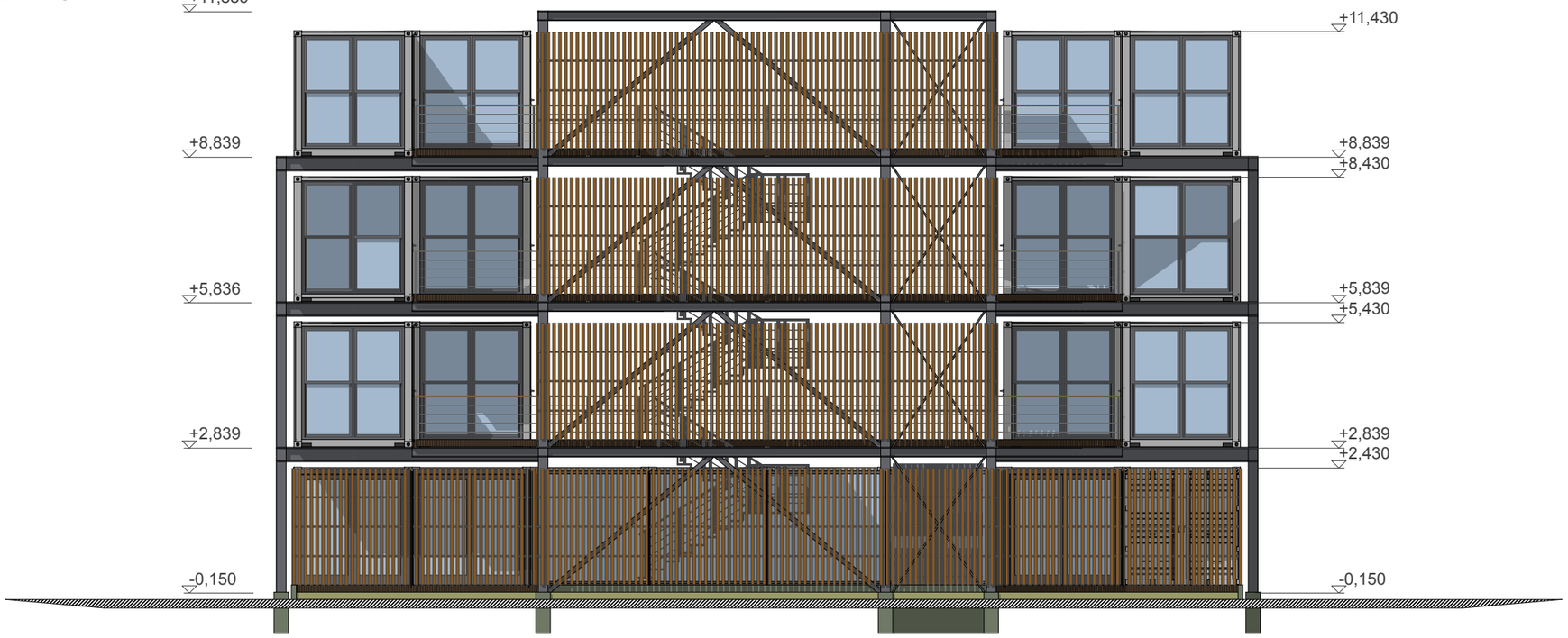
POSITION	NAME	SIGN
M. ARCH.	ALEKSANDR CETVERIK	
PROFESSOR	JOSEPH DI PASQUALE	
CLIENT	POLITECNICO DI MILANO	

MODULAR COWORKING STATION

FOUNDATION PLAN

DATE	STAGE	SHEET	TOTAL
05.12.14	DRAFT		

SOUTH ELEVATION



NORTH ELEVATION

					TOTAL
				SHEET	
				STAGE	DRAFT
				DATE	05.12.14
				MODULAR COWORKING STATION	
				SOUTH, NORTH ELEVATIONS	

POSITION	NAME	SIGN
M. ARCH.	ALEKSANDR CETVERIK	
PROFESSOR	JOSEPH DI PASQUALE	
CLIENT	POLITECNICO DI MILANO	

WEST ELEVATION

EAST ELEVATION

MODULAR COWORKING STATION

EAST, WEST ELEVATIONS

DATE	05.12.14
STAGE	DRAFT
SHEET	
TOTAL	

POSITION	NAME	SIGN
M. ARCH.	ALEKSANDR CETVERIK	
PROFESSOR	JOSEPH DI PASQUALE	
CLIENT	POLITECNICO DI MILANO	

SECTION A-A

SECTION B-B

MODULAR COWORKING STATION

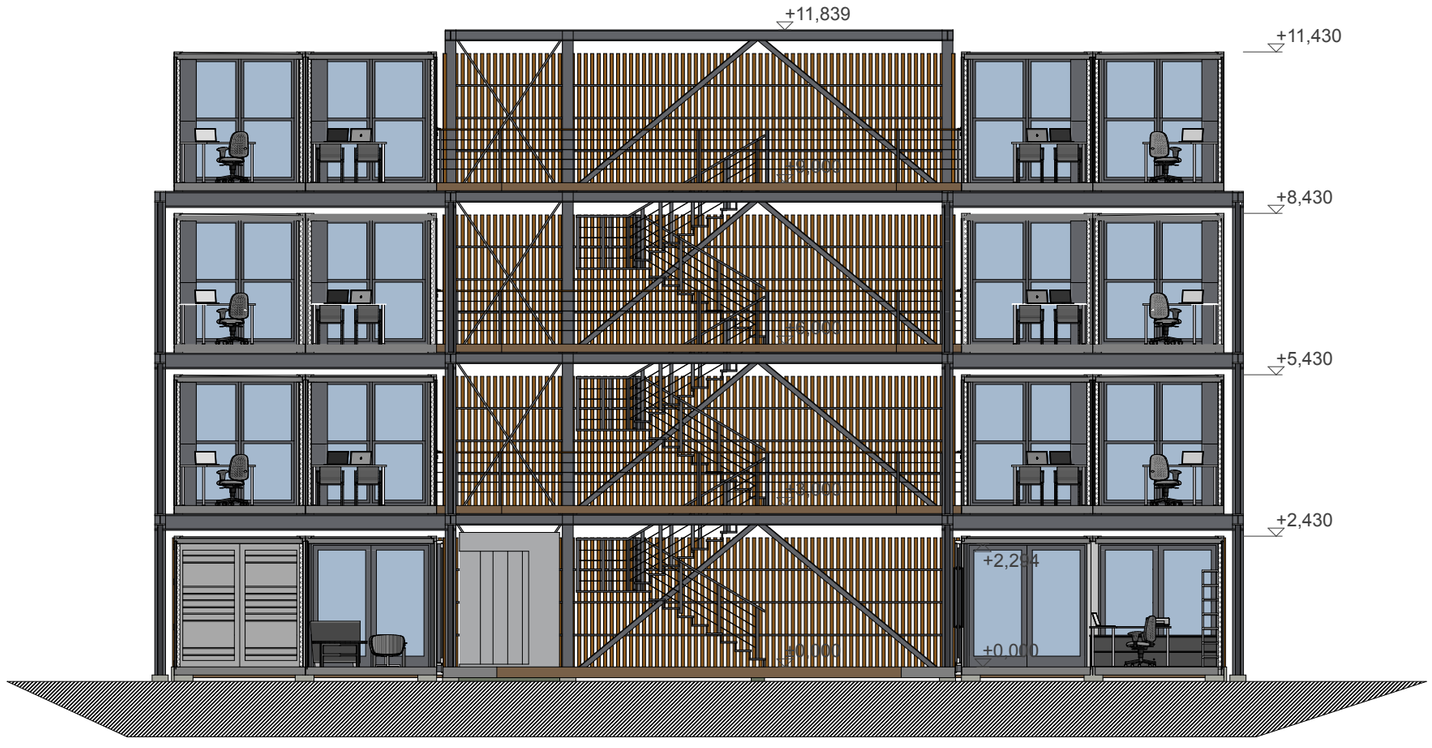
SECTION A-A, B-B

DATE	05.12.14
STAGE	DRAFT
SHEET	
TOTAL	

	NAME	SIGN
POSITION		
M. ARCH.	ALEKSANDR CETVERIK	
PROFESSOR	JOSEPH DI PASQUALE	
CLIENT	POLITECNICO DI MILANO	

SECTION C-C

SECTION D-D



MODULAR COWORKING STATION

SECTION C-C

DATE	05.12.14
STAGE	DRAFT
SHEET	
TOTAL	

POSITION	NAME	SIGN
M. ARCH.	ALEKSANDR CETVERIK	
PROFESSOR	JOSEPH DI PASQUALE	
CLIENT	POLITECNICO DI MILANO	

SECTION E-E

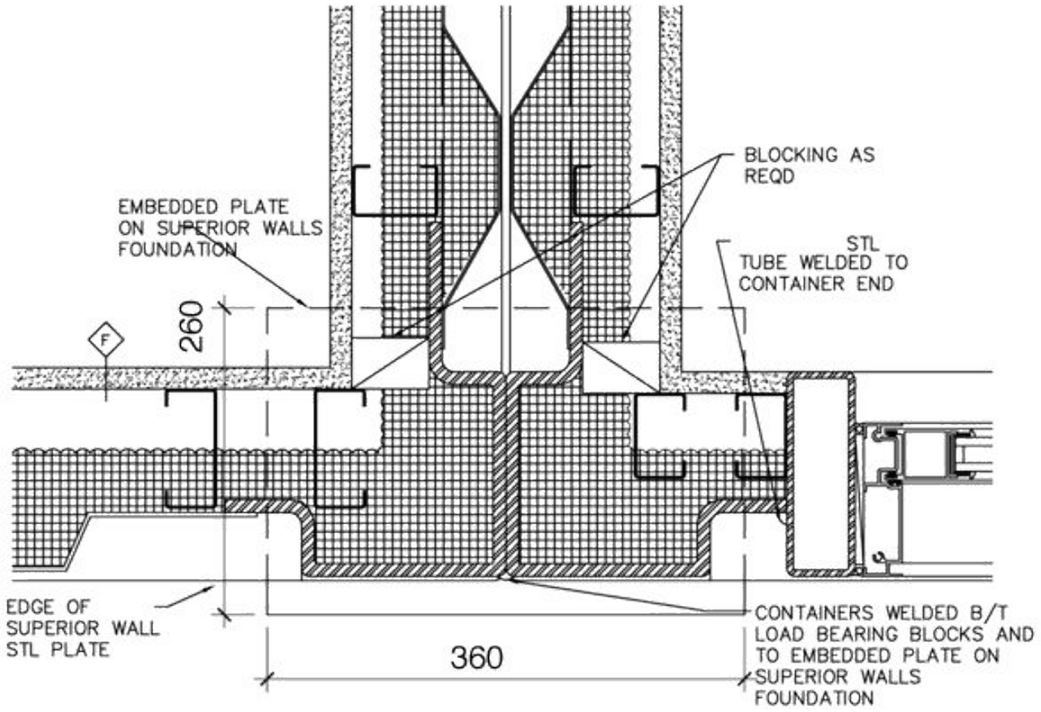
MODULAR COWORKING STATION

SECTION E-E

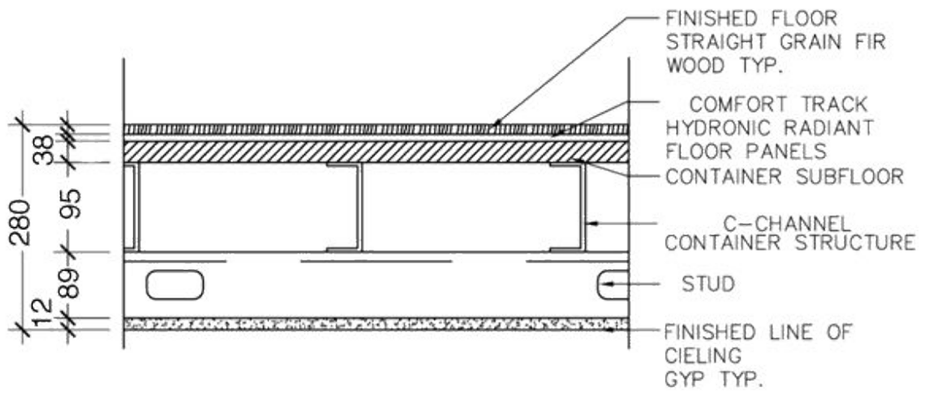
DATE	STAGE	SHEET	TOTAL
05.12.14	DRAFT		

POSITION	NAME	SIGN
M. ARCH.	ALEKSANDR CETVERIK	
PROFESSOR	JOSEPH DI PASQUALE	
CLIENT	POLITECNICO DI MILANO	

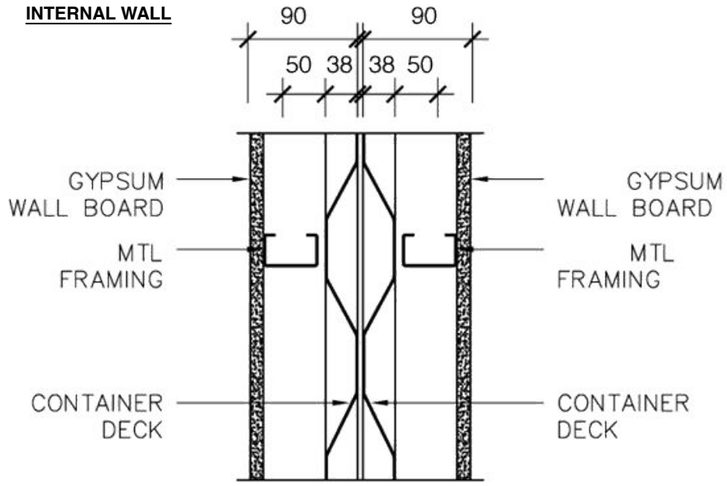
WINDOW'S CONNECTION WITH CONTAINER



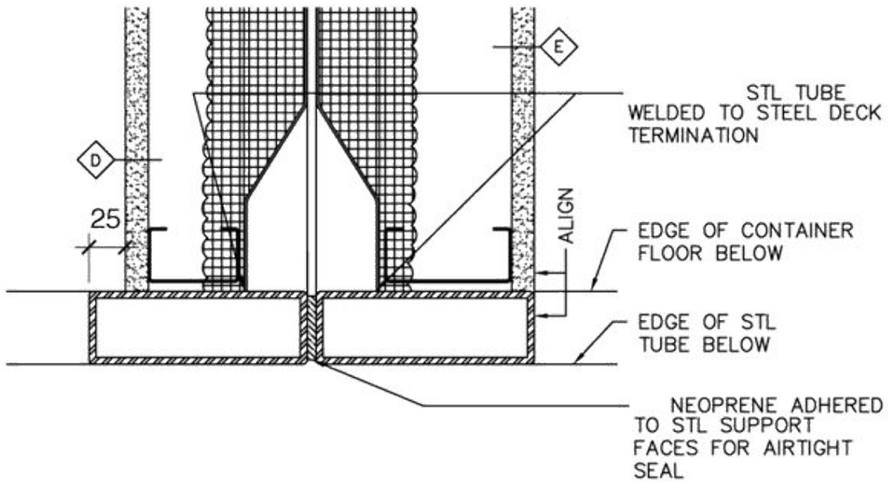
CONTAINER FLOOR



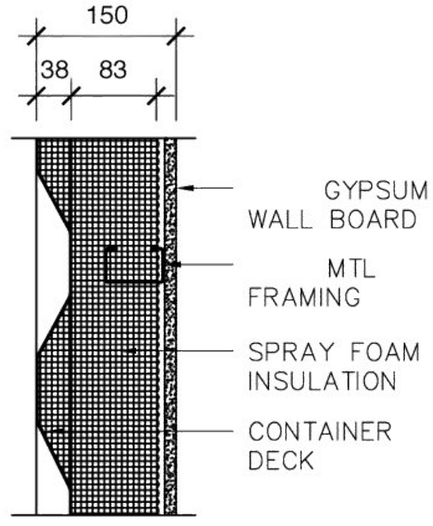
INTERNAL WALL



CONTAINER'S CONNECTION



EXTERNAL WALL



MODULAR COWORKING STATION

DETAILS

DATE	STAGE	SHEET	TOTAL
05.12.14	DRAFT		

POSITION	NAME	SIGN
M. ARCH.	ALEKSANDR CETVERIK	
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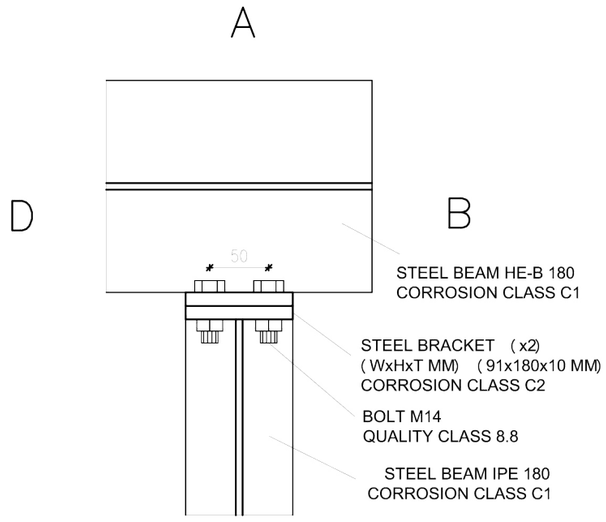
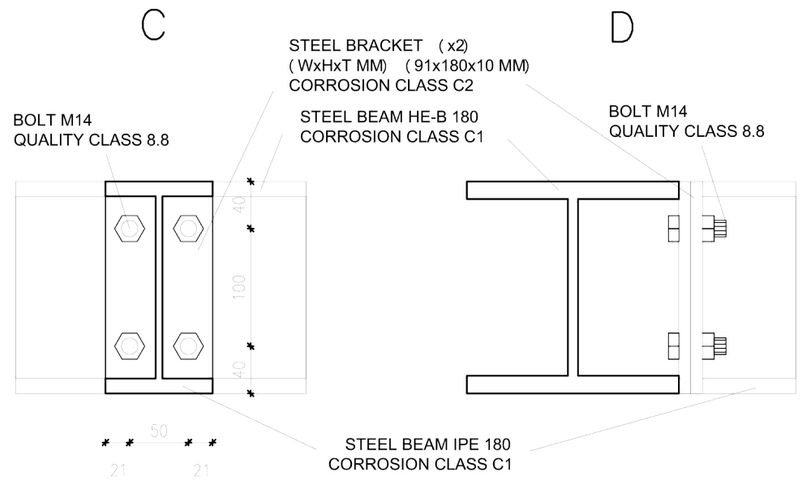
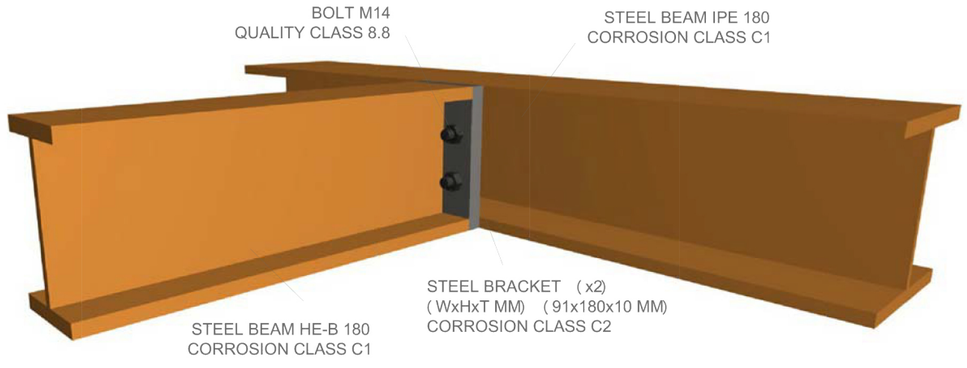




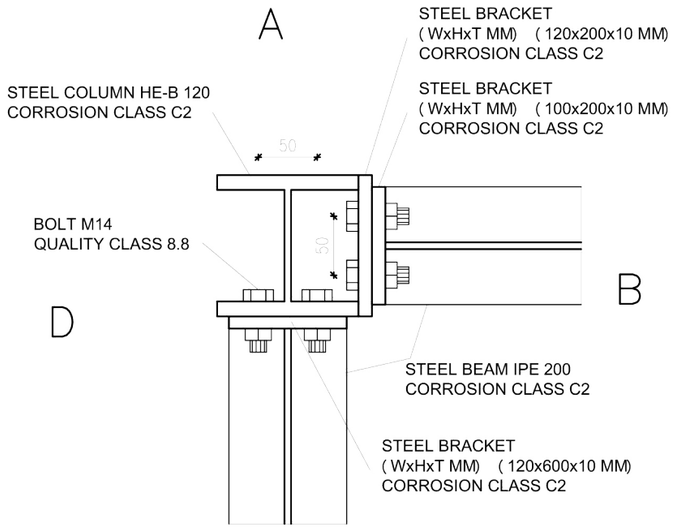


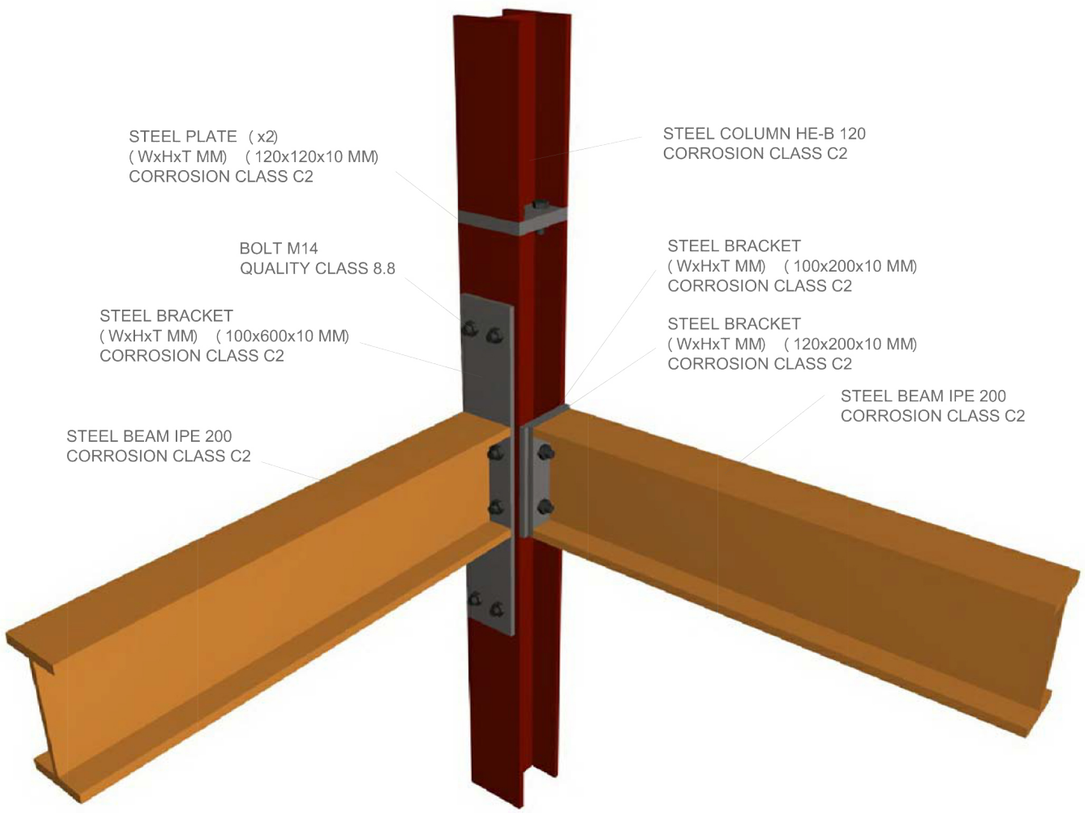
MODULAR COWORKING STATION

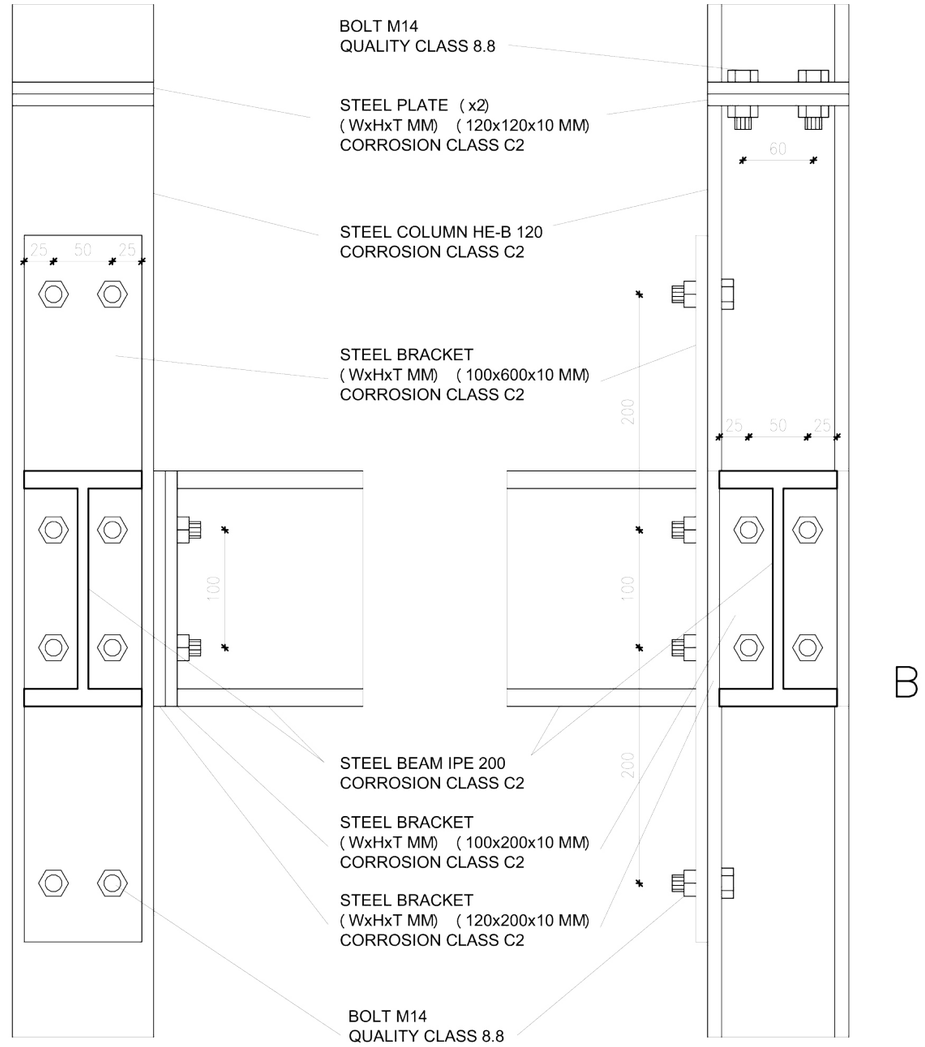
STEEL BEAM TO BEAM CONNECTION

DATE	STAGE	SHEET	TOTAL
05.12.14	DRAFT		

POSITION	NAME	SIGN
M. ARCH.	ALEKSANDR CETVERIK	
PROFESSOR	JOSEPH DI PASQUALE	
CLIENT	POLITECNICO DI MILANO	





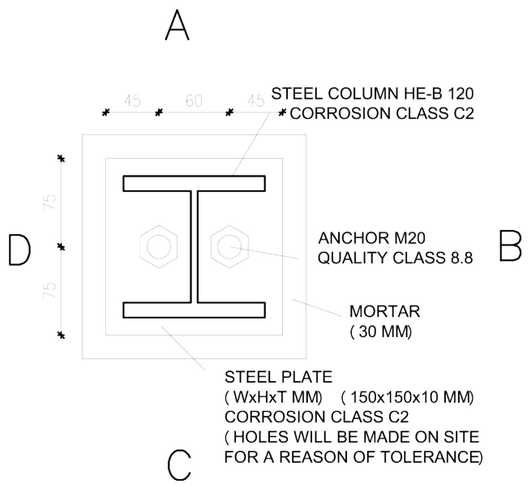


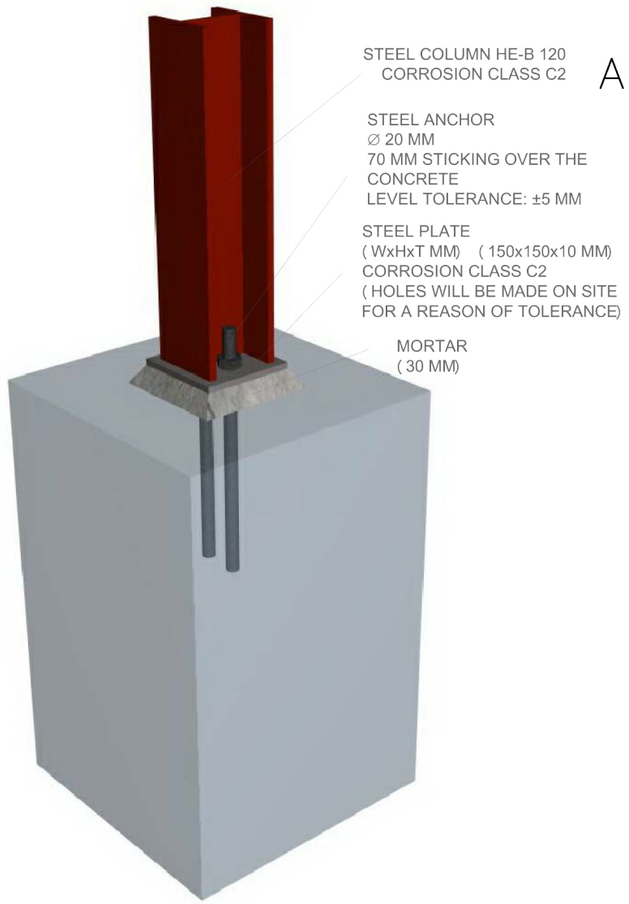
MODULAR COWORKING STATION

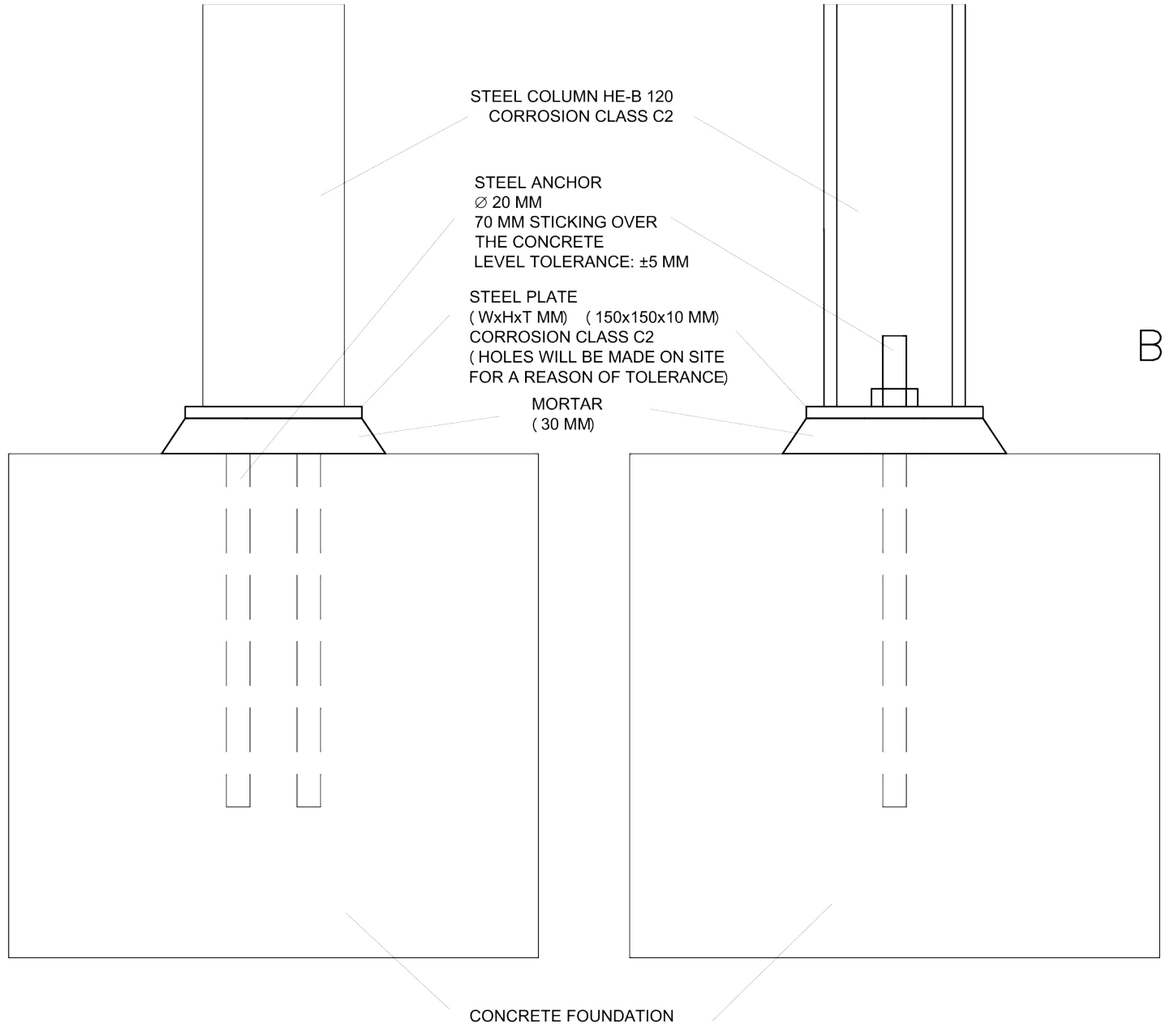
STEEL BEAM TO COLUMN CONNECTION

DATE	STAGE	SHEET	TOTAL
05.12.14	DRAFT		

POSITION	NAME	SIGN
M. ARCH.	ALEKSANDR CETVERIK	
PROFESSOR	JOSEPH DI PASQUALE	
CLIENT	POLITECNICO DI MILANO	







MODULAR COWORKING STATION

STEEL FRAME / FOUNDATION DETAIL

DATE	STAGE	SHEET	TOTAL
05.12.14	DRAFT		

POSITION	NAME	SIGN
M. ARCH.	ALEKSANDR CETVERIK	
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CLIENT	POLITECNICO DI MILANO	