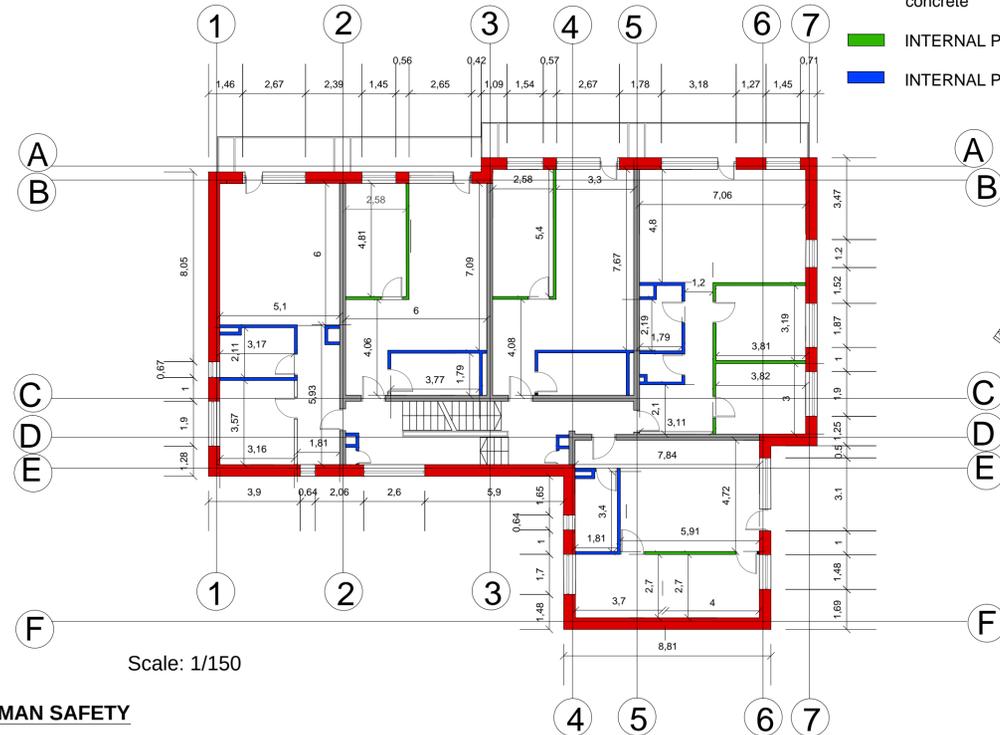


TECHNOLOGICAL CARD I: MASONRY WORKS

INTRODUCTION

In this card we are going to talk about the masonry works of the outside walls. In the project we count with some monolithic walls that are going to be built in a parallel way, they are made of reinforced concrete. There are also internal partitions of clinker bricks and plasterboards. The facade wall is going to be part of the structure as there are no pillars in the project.

LOCATION OF DIFFERENT WALLS

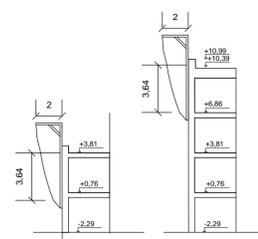


Scale: 1/150

HUMAN SAFETY

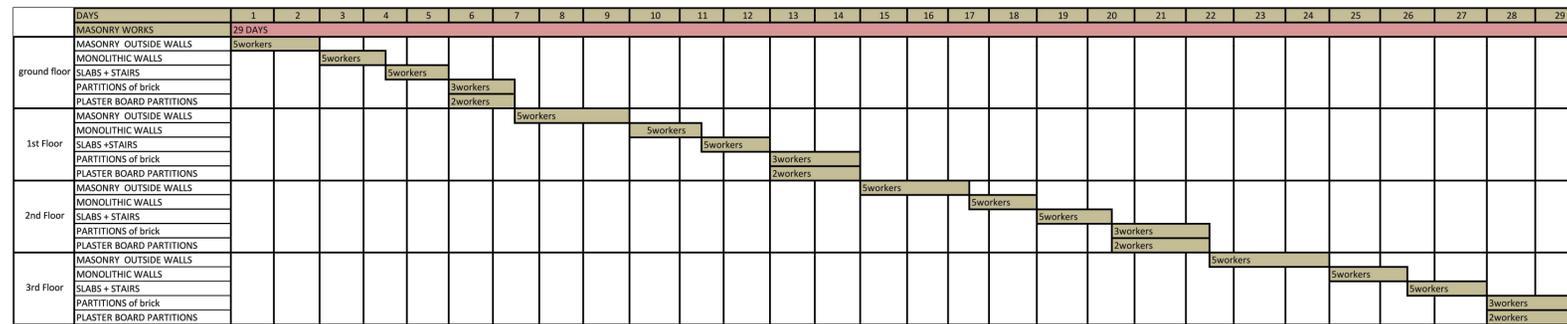
RISKS	CAUSES	COLECTIVE PROTECTIONS	INDIVIDUAL PROTECTIONS	SAFETY MEASURES
- Falls of personal at different level	- Working at height	- security rail in the border of the slab	- Security boots	- Keep the working area clean and tidy
- Falls of personal at the same level	- manipulate heavy elements	- Net	- Helmet	- Mark the stocking areas
- Cuts	- Disorder and dirtiness	- Boards in holes	- Security gloves	
- Fall of elements or materials	- Materials stoked up in a wrong place			
- Stuck by objects	- Same position for a long time			
- Overexertion	- Exposure to harmful substances			

In the masonry works there will be a gallow type safety net. the net will save two floors to keep a height of fall less than 6m.



ORGANIZATION OF WORKS

	WORK	PERFORMANCE (h/m ²)	AREA (m ²)	Nº WORKERS	DAYS
ground floor	MASONRY OUTSIDE WALLS	0,438	179,07	5	2
	MONOLITHIC WALLS	0,41	137,54	5	1,5
	SLABS + STAIRS	0,163	327,92	5	1,5
	PARTITIONS of brick	0,41	95,22	3	1,5
1st floor	plaster board partitions	0,263	93,96	2	1,5
	MASONRY OUTSIDE WALLS	0,438	214,9	5	2,5
	MONOLITHIC WALLS	0,41	137,54	5	1,5
	SLABS + STAIRS	0,163	352,2	5	1,5
2nd floor	PARTITIONS of brick	0,41	120,3	3	2
	plaster board partitions	0,263	102,6	2	2
	MASONRY OUTSIDE WALLS	0,438	214,9	5	2,5
	MONOLITHIC WALLS	0,41	137,54	5	1,5
3rd floor	SLABS + STAIRS	0,163	352,2	5	1,5
	PARTITIONS of brick	0,41	120,3	3	2
	plaster board partitions	0,263	102,6	2	2
	MASONRY OUTSIDE WALLS	0,438	214,9	5	2,5

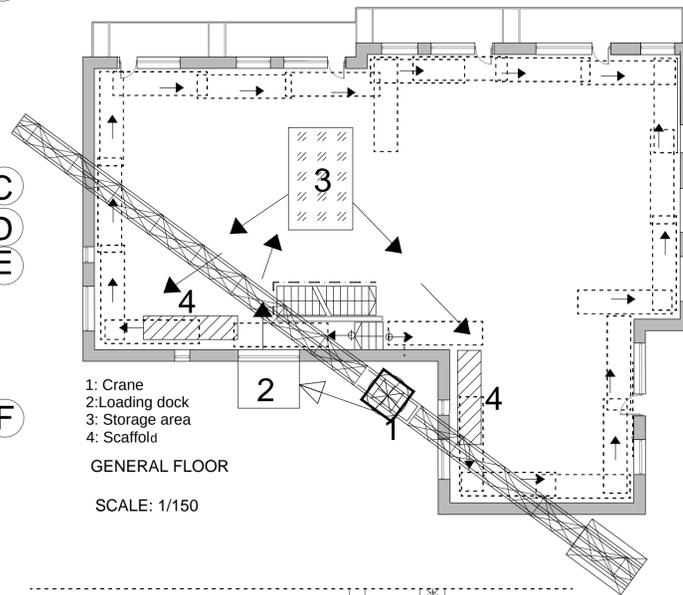


MATERIAL AND TECHNICAL RESOURCES

U	MATERIALS	QUANTITY
u	Expanded clay block	14704,3
m ³	Water	7,41
t	Cement mortar M-5	38,71
m	Prestressed concrete joist, T-18, Lmedium = <4 m	148,27
u	Expanded clay tile, 30x15x4,8 cm	1235,65
MACHINERY AND TOOLS		
u	forklift	1
u	cutting machine	1
u	tower crane	1
u	trowel	2
u	level	2
u	hammer	2
u	plumb	2
AUXILIARY RESOURCES		
u	loading and unloading platform	1
WORKERS		
u	1ª class expert of bricklaying.	1
u	Workman of bricklaying.	1

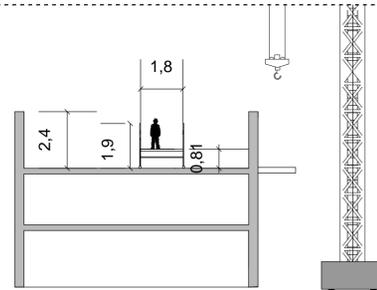
- MASONRY OUTSIDE WALL: Expanded clay blocks
- MONOLITHIC WALL: Reinforced concrete
- INTERNAL PARTITION: Clinker briks
- INTERNAL PARTITION: Plaster boards

SEQUENCE OF MASONRY WORKS

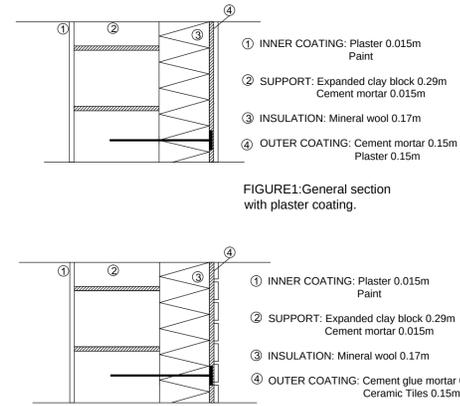


GENERAL FLOOR

SCALE: 1/150



TWO KINDS OF OUTSIDE WALLS



QUALITY CONTROL

RECEPTION: There will be a control in the reception, where all the products will have to get with them the information of their qualities, the commercial brand, and the first quality mark in case. It is obligatory to all the pieces to have the European Certificate (CE). All the documents will be according to the project and according to the Spanish normative CTE(Technical Code) its Basic Document about fabrics DB-SE-F they will bring the supplier's declaration's on its strength and manufacturing category.

FOR THE EXPANDED CLAY BLOCKS:

- In the zone of work there will be a checking of the pieces to verify that any piece is broken or any characteristic is affected by its transport or storage.
- There will be assay for some inspection lots to guarantee the required characteristics in the project.

-The pieces will be properly storage in an specific area and put in a correct way that don't deteriorate the pieces. They will be collected on a site far from substances or environments that can damage the physical or chemical material of the pieces

THE CEMENT MORTAR:

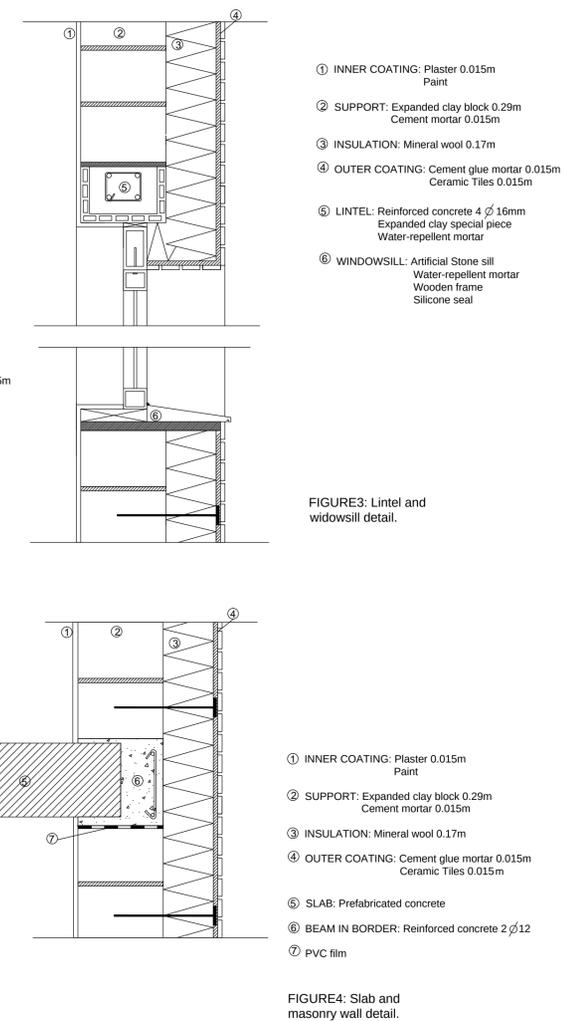
- The cement mortar will be used following the manufacturer's instructions that shall include the type of mixer, the mixing time and the amount of water.
- The mortar must be used before expiry of the period of use defined by the manufacturer. If the water is evaporated it may be added only during the period of use that the manufacturer defines. The mortar will be used before starting to set, the mortar that has started to set will be refused and not reused.
- The resistance of the mortar will be test according to the UNE EN 1015-11:2000

TECHNICAL-ECONOMIC INDICATORS

	UNITY PRICE (€/m ²)	AREA (m ²)	PRICE (€)
EXPANDED CLAY BLOCK WALL	37,44	823,77	30.841,95

WORK	PERFORMANCE (h/m ²)	AREA (m ²)	Nº WORKERS	HOURS (h/day)	DAYS
MASONRY OUTSIDE WALLS	0,438	823,77	5	8	9

SINGULAR DETAILS



TOLERANCES

	Position	Tolerance (mm)
Plumb deviation	In floor	20
	In the Building	50
Axiality		20
Flatness	In 1m	5
	In 10m	20
Thickness		+/- 25

	NAME	SIGNATURE	DATE	TITLE OF FINAL THESIS PROJECT
STUDENT	Celia Chardi Perez			Daugiabucio gyvenamojo namo Žirmūnų g. 1L, Vilniuje, statybos projektavimas Construction planning of the residential building at Žirmūnai str. 1L in Vilnius
SUPERVISOR	Jonas Šaparauskas			PLAN NAME NUMBER OF PLAN
HEAD OF DEPARTMENT	Edmundas Kazimieras Zavadskas			TECHNOLOGICAL CARD I: MASONRY WORKS 2
REVIEWER				UNIVERSITY DEPARTMENT
	VILNIUS GEDIMINO TECHNIKOS UNIVERSITETAS			Department of Construction Technology and Management