



# WINDOWS

## - DEFINITION

A WINDOW IS AN OPENING IN A WALL, DOOR, ROOF (SKY LIGHT) THAT ALLOWS THE PASSAGE OF LIGHT, SOUND, AND AIR. COMMONLY FITTED WITH A FRAME IN WHICH ARE SET MOVABLE SASHES CONTAINING PANES OF GLASS.

MODERN WINDOWS ARE USUALLY GLAZED OR COVERED IN SOME OTHER TRANSPARENT MATERIAL

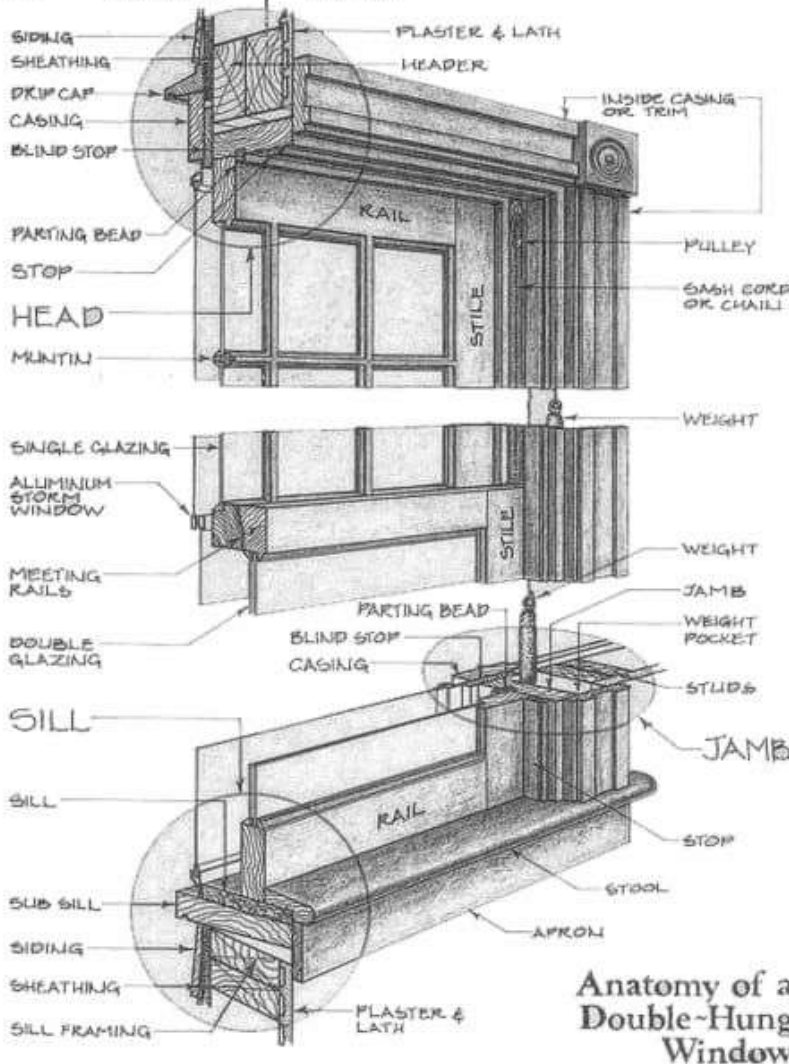
## -WHAT ARE WINDOW COMPONENTS TERMINOLOGY?

### WINDOW FRAME :

- 1) HEAD
- 2) JAMB
- 3) SILL
- 4) STOOL

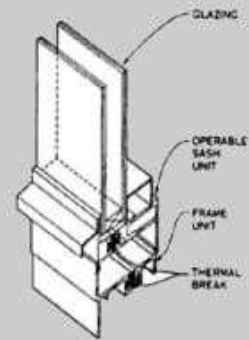
### WINDOW GLASS COMPONENTS:

- 1) PANE
- 2) SASH
- 3) MULLION



Anatomy of a Double-Hung Window

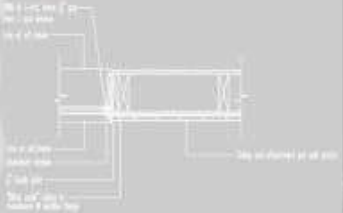
## -ALUMINUM FRAME DETAILS:



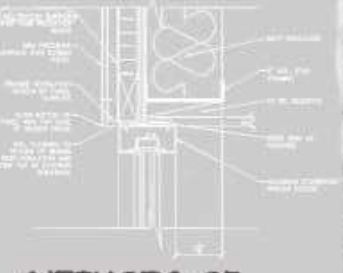
## - ALUMINUM SILL DETAIL :



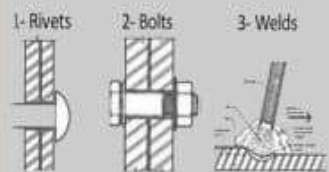
## - ALUMINUM JAMB DETAIL :



## - ALUMINUM HEAD DETAIL :



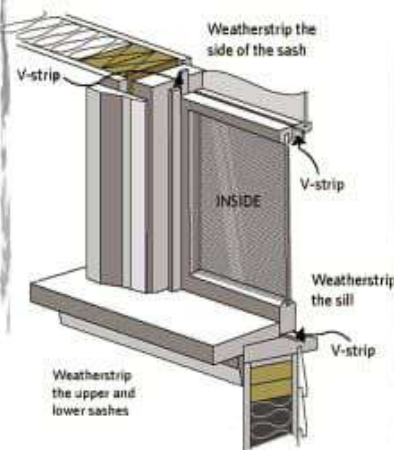
## -METHODS OF ALUMINUM INSTALLATION :



## -ALUMINUM COATING :

PROTECTIVE COATING ALUMINUM SECTIONS ARE USUALLY FINISHED WITH ANODIZED POLYESTER POWDER OR LIQUID ORGANIC COATING ANODISED FINISH. AN ALUMINUM OXIDE COATING PRODUCED BY ELECTRONIC METHOD.

## -JORDANIAN CODES FOR ALUMINUM



2) THE SLIDING WINDOW AND DOOR FRAME SECTIONS SHALL BE PROVIDED WITH SPECIAL HOLES FOR DRAINING RAIN WATER TO THE OUTSIDE

3) THE MESH USED SHALL BE MADE OF GLASS FIBER MATERIAL OF 18 \* 16 GAUGE OR OF RUSTLESS STEEL WIRE OF 1.9 MM DIAMETER AND AS STIPULATED IN THE SCHEDULE OF QUANTITIES OR SPECIAL CODES.

1) THE SUBMITTED SAMPLES MUST PASS THE AIR PERMEABILITY, WATERTIGHT AND WIND RESISTANCE TESTS IN THE LABORATORY .



*Building Finishing  
Project : Window  
Scale : 1:1*

Sahar M. Asad  
Nedaa Ahmed  
Hana Abu-Khazim  
Noor Kaseem

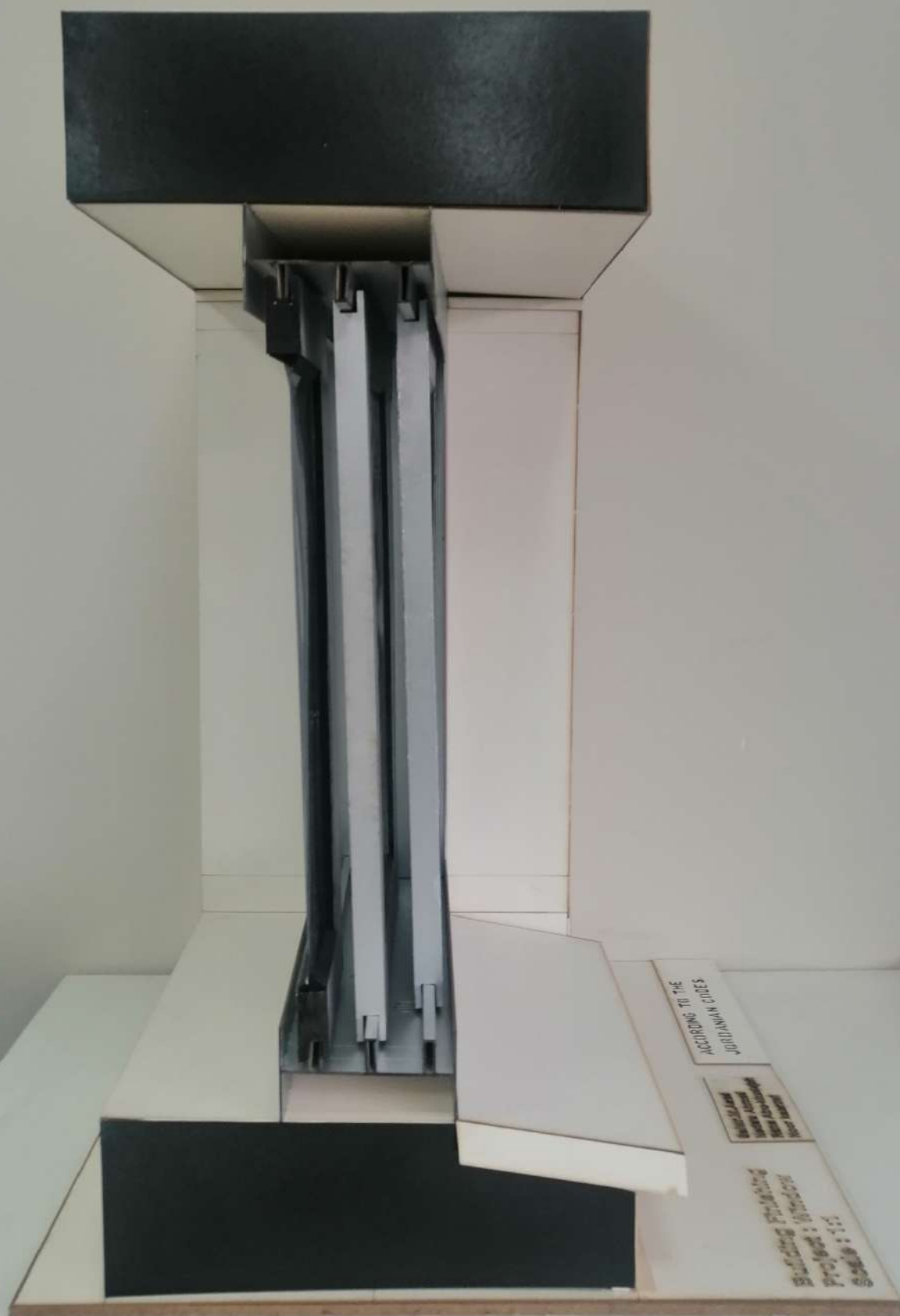
ACCORDING TO THE  
JORDANIAN CODES.



ACCORDING TO THE  
JORDANIAN CODES

مبنى مركز الدراسات والبحوث  
بناء على المواصفات  
المعمارية الأردنية

Building Planning  
Project: Jordan  
Scale: 1:10



ACCORDING TO THE  
JORDANIAN CODES

Building Planning  
Project: Jordan  
Scale: 1:10

Building Planning  
Project: Jordan  
Scale: 1:10





JORDANIAN 2023

New York  
Jordanian 2023

Building  
Project: 18-17  
Scale: 1:1



# STONE CLADDING

## Stone as Cladding Material :-

**Stone cladding:** it's a thin layer of any stone used as decorative facing material that is not meant to be load bearing. Stone cladding is a Stone veneer, or simulated stone, applied to a building or other structure made of a material other than stone. Stone cladding is sometimes applied to concrete and steel buildings as part of their original architectural design.

## Brief History of Stone in Jordan

### Um el-Jimal

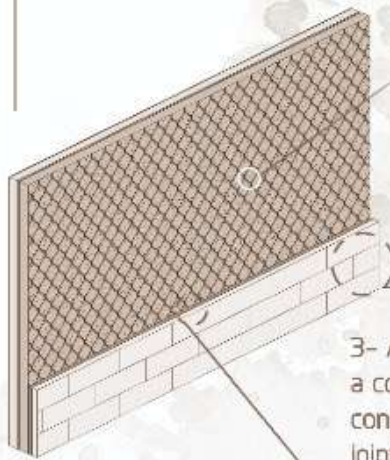
One of the oldest cities in Jordan that was completely built of stones.

It has been succeeded by different civilizations and centuries, as we can see the succession here



## Stone Cladding Installation Method

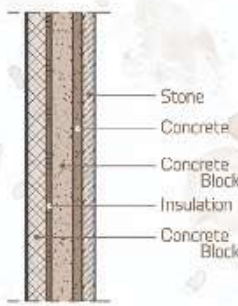
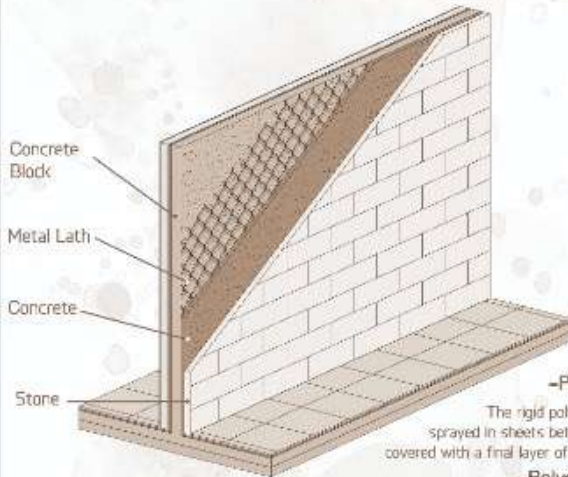
### Wet Method (According to Jordanian code)



1- Install a metal lath over a wall using clamp in different position

2- Start building courses above each other and apply staggering method - use of cement mortar between courses (in joint area).

3- After finish of built of 3 courses pour a concrete behind it ( to bond stone with concrete ), put wood wedge between joint to ensure level.



Section  
Insulation  
-Polyurethane foam

The rigid polyurethane foam board insulation is usually sprayed in sheets between the inner and outer wall and then covered with a final layer of cement and plaster.

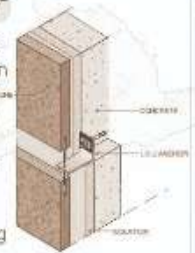
-Polystyrene

The Polystyrene foam insulation is usually install to the wall after adding a cement layer to the wall (water proofing) then add a nylon layer to prevent cement from reacting with polystyrene then add the polystyrene sheet

### Dry Method (According to Jordanian code)

#### Installation method

- 1- paint the wall with an insulating material to prevent rotting and insect accumulation in the space between the wall and the stone.
- 2- fix the assembly element to the wall .
- 3- The stone is installed on the assembly element and fixed it with screws.
- 4- ensure its verticality by using water scale.

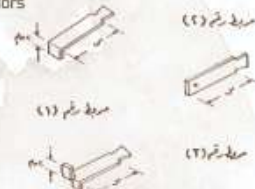


#### Assembly Type-

##### 1- Alsak

The Alsak used shall be made of sheets 12 mm thick  
-The sides of the rail shall be punched at the rate of one hole every 100 mm. This is for the purposes of fixing the alsak to the brick before pouring concrete

##### 2- Anchors



-Used anchors are made of 2 mm thick sheets, 40 mm wide and in lengths that fit the width so that their shapes are according to the shape.

Anchors No. 1 and No. 2 are used when completing the fixation vertically.

The Anchors No. 3 is used when using the fastening alsak vertically.



## Jordanian Building Code

-Building stones are classified according to the specifications and standards adopted by the Royal Scientific Society and the Ministry of Public Works into 3 categories (A,B,C) from the finest to lowest quality respectively.

-Course : is a horizontal layer of stone .

-The width of a piece of stone = 1.2 to 2.5 of its height.

-Vertical spaces between stone pieces called head joint , while the horizontal spaces called bed joint .

-It is allowed to construct a maximum of 3 courses per day to ensure the stability of the stone in the wall.

-Head joint must be perpendicular to bed joint

-Bed joint must be parallel straight and fixed in thickness ratio of the length of the stone to the height of the course

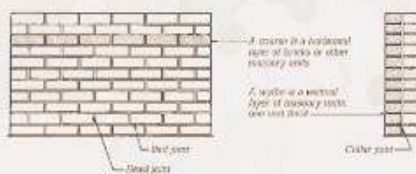
A		B		C	
min	max	min	max	min	max
1.8	3	1.8	3	1.2	3

-The horizontal distance between any two head joint must be equal or greater than 60%,45%,30% of the stone piece of height for three orders A,B,C

Joint thickness =4 to 15 mm

- Maximum two head joint must intersect with each stone piece .

- A mix of stone with different surface treatments can be used in the same façade.



#### Building forms

##### 1- Regular course construction:

Course height must be same for all façades.

Stone lengths are from the limits specified in the table from previous slide

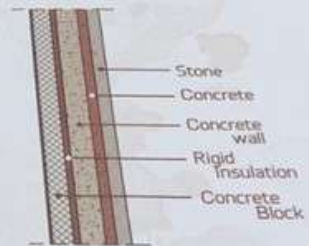
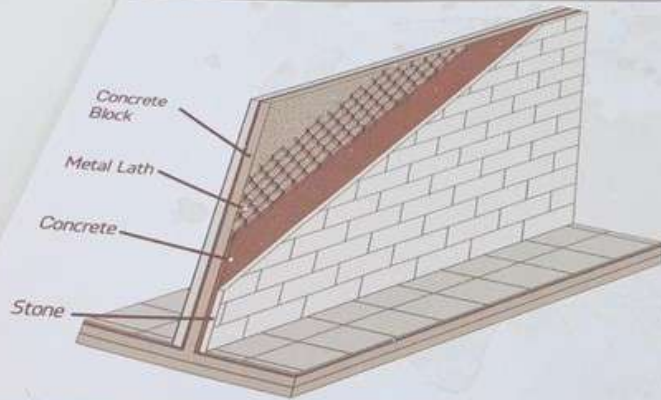
##### 2- Courses with different heights:

One course have uniform height, but each course heights are different

It is forbidden to pass one stone piece with more than one head joint .

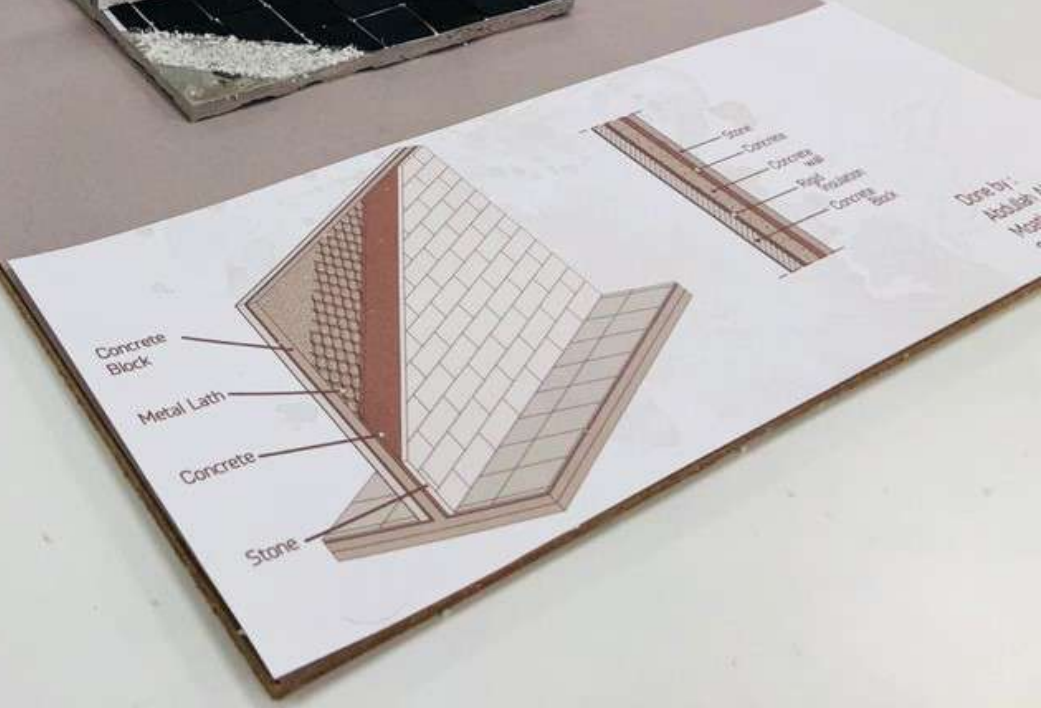


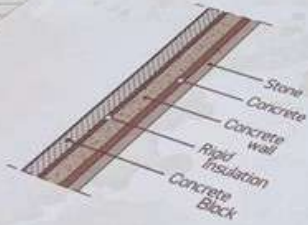
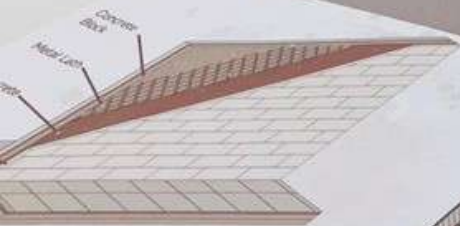
Classical building construction using regular courses (uniform height)



Done by :  
Abdullah Ahmed Saleh  
Moath Al-Omour  
Sara Izz Al-deen



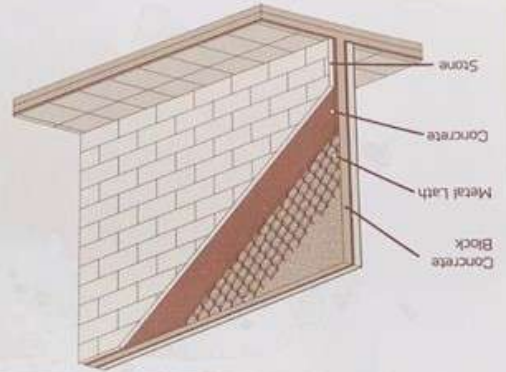
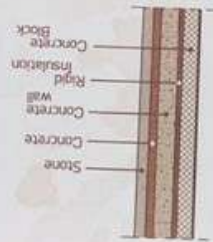




Done by :  
Abdullah Ahmed Saleh  
Moath Al-Omour  
Sara Izz Al-deen



Done by :  
Abdullah Ahmed Saleh  
Moath Al-Omour  
Sara Izz Al-deen





**BUILDING FINISHING**

DONE BY:  
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RUBA JABER  
TASNEEM NASRALLAH

SUPERVISORS:  
DR. S. AWAWDEH  
ARCH. F. KHASSAWNEH  
ARCH. E. TAMMONI  
ARCH. Q. HAMMAD

3<sup>RD</sup> YEAR

# INTERNAL WALL PARTITIONS

ARE VERTICAL DIVIDERS (THIN WALLS) MADE UP OF BRICKS, CLAY BLOCKS, CONCRETE, GLASS BLOCKS, PANELS, OR OTHER SUCH MATERIAL WHICH ARE USED TO SEPARATE BUILDING INTERNAL SPACES INTO ROOMS AND CIRCULATION AREAS LIKE CORRIDORS TO PROVIDE SPECIFIC AND PRIVATE SPACES

**Types :**

**STRUCTURALLY**

LOAD BEARING

NON-LOAD BEARING

**MOVEMENT**

MOVABLE (FOLDING & SLIDING)

FIXED

**INSTALLATION METHOD**

PRE-CAST CONSTRUCTION

SIT-CAST CONSTRUCTION

**FRAMING**

SHEETS & HOLLOW BLOCKS (GLASS)

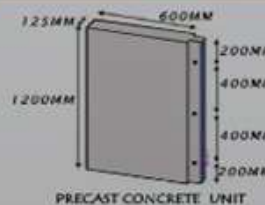
DRY WALL



## CONCRETE PARTITION WALL

**PRE-CAST CONCRETE**

- BUILT FROM PRECAST CONCRETE SLAB UNITS
- UNIT THICKNESS RANGES FROM 25MM TO 40MM
- JOINTS SHALL BE FILLED WITH MORTAR

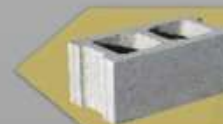


PRECAST CONCRETE UNIT



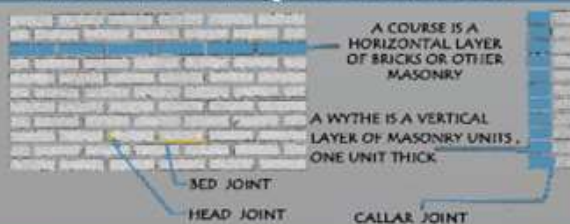
**CAST-IN-SITE CONCRETE**

- 80 TO 100MM THICK
- ARE RIGID AND STABLE
- REQUIRE COSTLIER FORMWORK



SOLID DENSE BLOCK (STANDARD)	18.5 KG
SOLID LIGHTWEIGHT BLOCK	15.5 KG
HOLLOW DENSE BLOCK	18.7 KG

Dimensions According to Jordanian Code

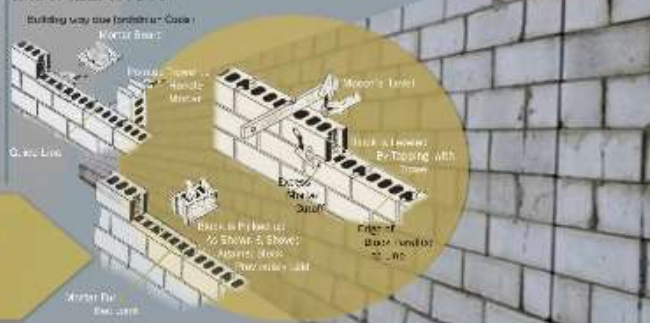


	LENGTH	WIDTH	HEIGHT
1	40 CM	10 CM	20 CM
2	40 CM	15 CM	20 CM
3	40 CM	20 CM	20 CM



## CEMENT-BRICK PARTITION WALL

**INSTALLATION**



Due to Jordanian Code : Build 6 Blocks Due Day

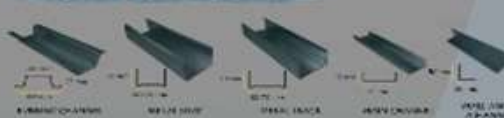
## GYPSUM PARTITIONS

**COMPONENTS**

**GYPSUM BOARD**



**GYPSUM BOARD CHANNEL**



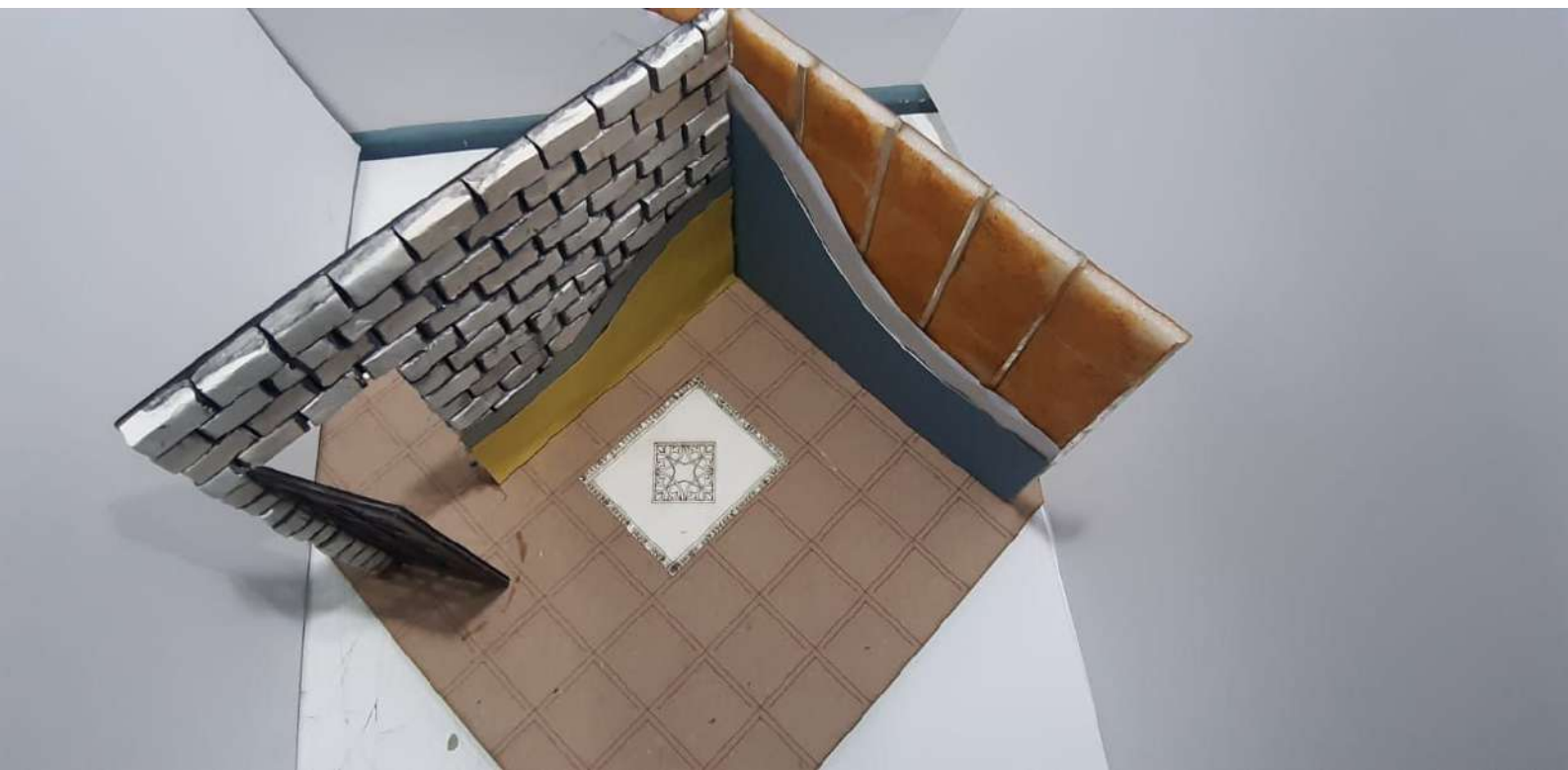
**GYPSUM BOARD STARCH**



Dimensions According to Jordanian Code









# Types Of Ceilings



1. Exposed 2. Tightly 3. Suspended

**Functions of Finish Ceilings**

- It helps control the diffusion of light and sound about the room.
- preventing the passage of sound vertically between the rooms above and below, and horizontally between rooms on either side of a partition.
- It is often designed to resist the passage of fire and must itself be appropriately noncombustible.

# Components and terminologies



Acoustical ceilings are supported on suspended grids of tees formed from sheet metal.

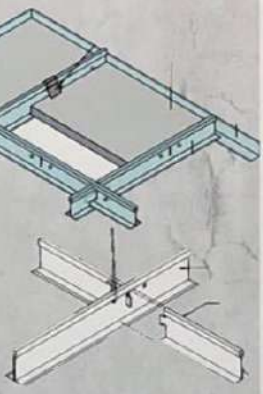
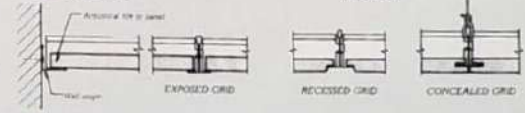
Product Type: T 38 Series Color: White

	<b>Main Runner</b> 38mm H x 24mm W x 3660mm L Thickness: 0.30mm
	<b>Cross Runner</b> 28mm H x 24mm W x 1220mm L Thickness: 0.28mm 28mm H x 24mm W x 610mm L Thickness: 0.28mm
	<b>Wall Angle</b> 27mm H x 22mm W x 3050mm L Thickness: 0.40mm

### Ceilings panels

### edge molding

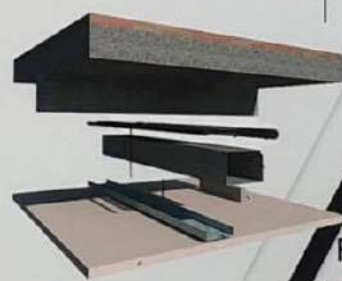
### cross T



Ceiling Grid T Shapes

# CEILINGS AND FALSE CEILINGS

**- Interstitial Ceilings**  
 interstitial ceiling is suspended at a level that allows workers to travel freely in the plenum space



1. Cross tee:
2. Main tee.

## Jordanian codes

### Board Dimensions

- (mm):
- 300 \* 300
  - 600 \* 600
  - 600 \* 300
  - 600 \* 1200

### Board thickness (mm):

- 13
- 15
- 18
- 25

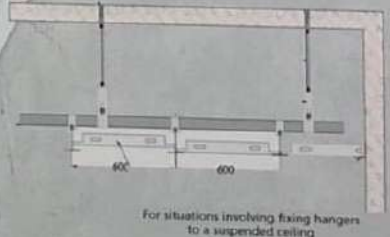
### Suspension System

General: The used suspension system shall comply with the American standard specifications (ASTM - C 1075), provided that the parts made of steel shall be treated against rust and corrosion according to the American standard specifications (ASTM B 633)

### Types of suspension systems:

1. Direct - hung Suspension System.
  2. Indirect - hung Suspension System.
- Classification :
1. Light-duty system
  2. Intermediate-duty system
  3. heavy-duty system

## FALSE CEILING DESIGN



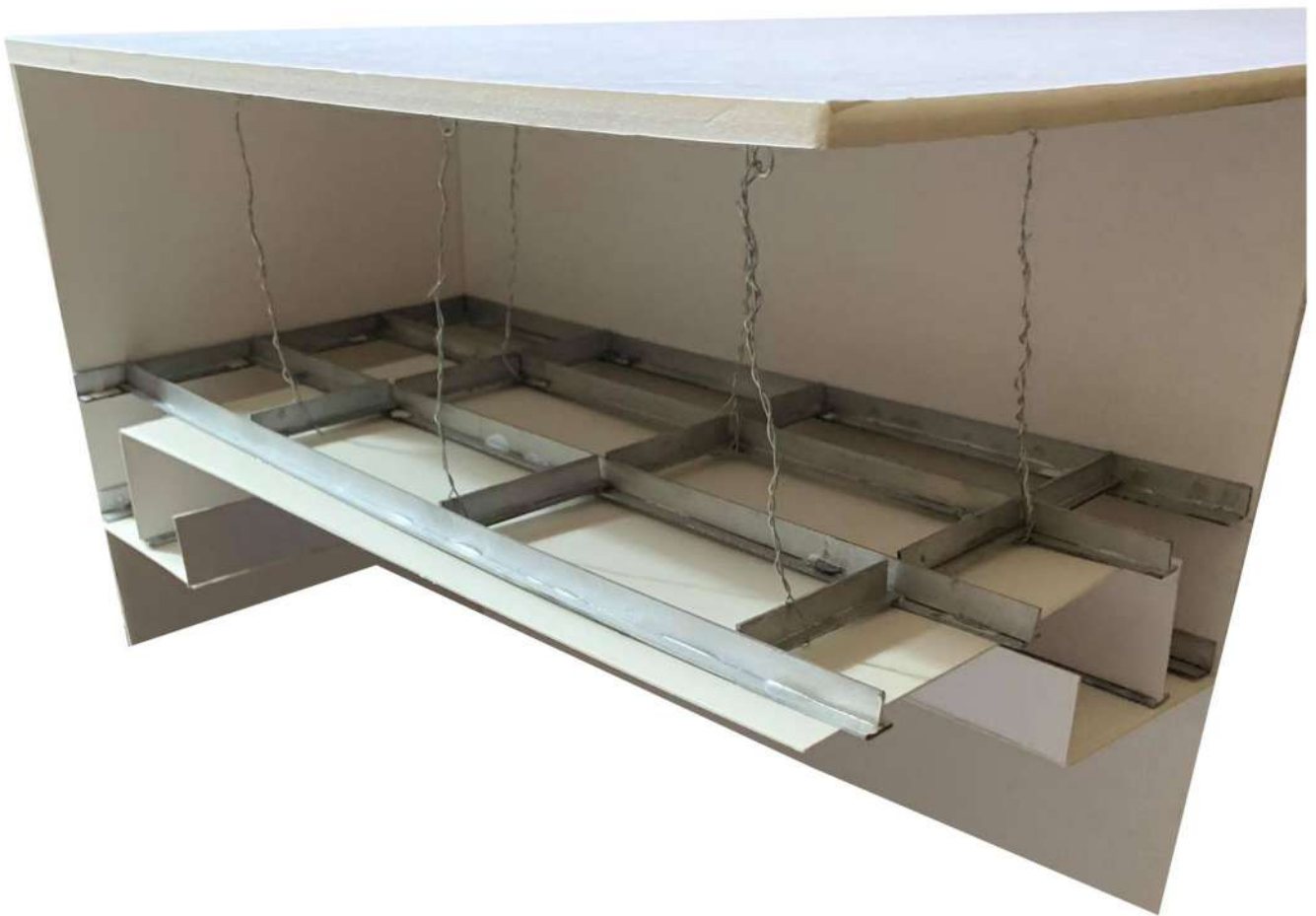
For situations involving fixing hangers to a suspended ceiling

### Reflected false ceiling plan

The false ceiling plan consists of gypsum board and gypsum tiles include the air and light outlets. The dual ducting system is coordinated with the ceiling levels and furniture AC: air conditioning





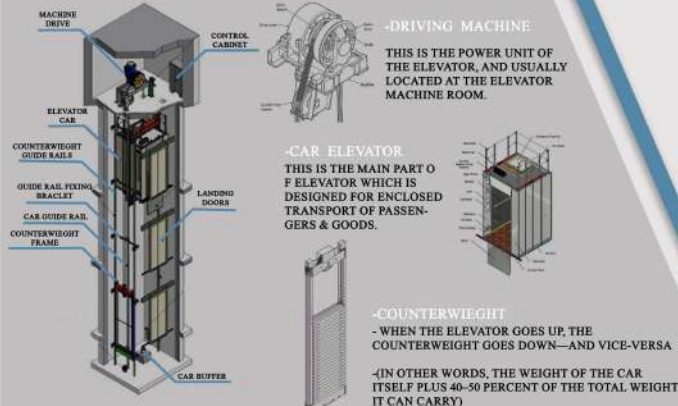






# ELEVATORS

CAR THAT MOVES IN A VERTICAL SHAFT TO CARRY PASSENGERS OR GOODS BETWEEN THE LEVELS OF BUILDING



## CONSTRUCTION

**STEP 1:** (EXCAVATION) DIG ELEVATOR PIT & READY FOR REBAR PLACEMENT

**STEP 5:** (STEEL TOWER) STEEL TOWER IS ERRECTED WITH COLUMNS AND IS READY FOR WOOD FRAMED HOIST WAY

**STEP 2:** (REBAR) PLACEMENT OF STEEL REBAR & READY FOR CONCRETE FORMS

**STEP 6:** (MACHINE ROOM) WHERE ELEVATOR EQUIPMENT, ELECTRICAL DISCONNECTS ETC. ARE PLACED

**STEP 3:** (FORMS) CONSTRUCTION OF WOOD FORMS & GET READY FOR CONCRETE

**STEP 7:** (GUIDE RAILS), SWITCH RAMPS, SERVICE LADDERS, AND SIMILAR SUPPORT EQUIPMENT ARE BOLTED INTO THE SHAFT

**STEP 4:** (CONCRETE) CONCRETE POURED, FORMS STRIPPED & READY FOR STEEL TOWER

**STEP 8:** A CRANE RAISES THE COUNTERWEIGHT TO THE TOP OF THE BUILDING AND LOWERS IT INTO THE SHAFT ALONG ITS RAILS.

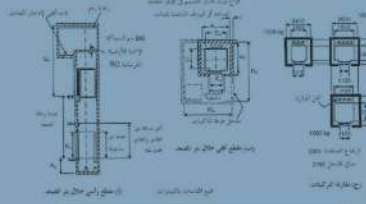
## STANDARDS OR CODES ACCORDING TO THE JORDANIAN CODES

THE CODES USED IN THE MODEL :

Code	Standard	Year	Applicable
S.S. 100	Code of Practice for the Design and Construction of Buildings	1985	Yes
S.S. 101	Code of Practice for the Design and Construction of Buildings	1985	Yes
S.S. 102	Code of Practice for the Design and Construction of Buildings	1985	Yes
S.S. 103	Code of Practice for the Design and Construction of Buildings	1985	Yes
S.S. 104	Code of Practice for the Design and Construction of Buildings	1985	Yes
S.S. 105	Code of Practice for the Design and Construction of Buildings	1985	Yes
S.S. 106	Code of Practice for the Design and Construction of Buildings	1985	Yes
S.S. 107	Code of Practice for the Design and Construction of Buildings	1985	Yes
S.S. 108	Code of Practice for the Design and Construction of Buildings	1985	Yes
S.S. 109	Code of Practice for the Design and Construction of Buildings	1985	Yes
S.S. 110	Code of Practice for the Design and Construction of Buildings	1985	Yes
S.S. 111	Code of Practice for the Design and Construction of Buildings	1985	Yes
S.S. 112	Code of Practice for the Design and Construction of Buildings	1985	Yes
S.S. 113	Code of Practice for the Design and Construction of Buildings	1985	Yes
S.S. 114	Code of Practice for the Design and Construction of Buildings	1985	Yes
S.S. 115	Code of Practice for the Design and Construction of Buildings	1985	Yes
S.S. 116	Code of Practice for the Design and Construction of Buildings	1985	Yes
S.S. 117	Code of Practice for the Design and Construction of Buildings	1985	Yes
S.S. 118	Code of Practice for the Design and Construction of Buildings	1985	Yes
S.S. 119	Code of Practice for the Design and Construction of Buildings	1985	Yes
S.S. 120	Code of Practice for the Design and Construction of Buildings	1985	Yes

Typical applications:

For people elevators in banks, office buildings, hotels ... etc.  
 Entrances: power-operated, with two sided doors that open from the middle, sliding doors.



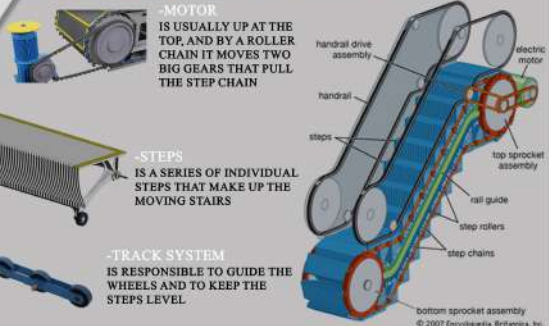
Jordanian Code :

Person	kg	Inside	Entrance
6	450	1400*1500	900
8	600	1400*1500	900
10	800	1400*1500	900
13	1000	1600*1500	900
16	1250	1800*1700	1000-1100

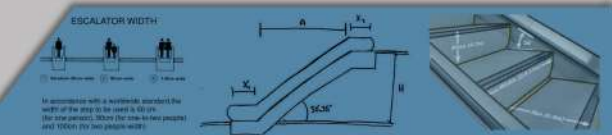
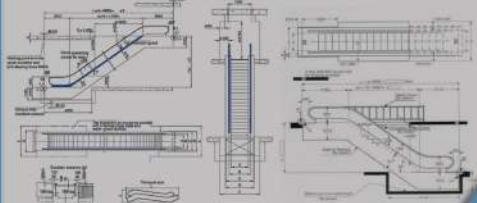


# ESCALATORS

MOVING STAIRCASE FOR CARRYING PEOPLE BETWEEN FLOORS OF A BUILDING.

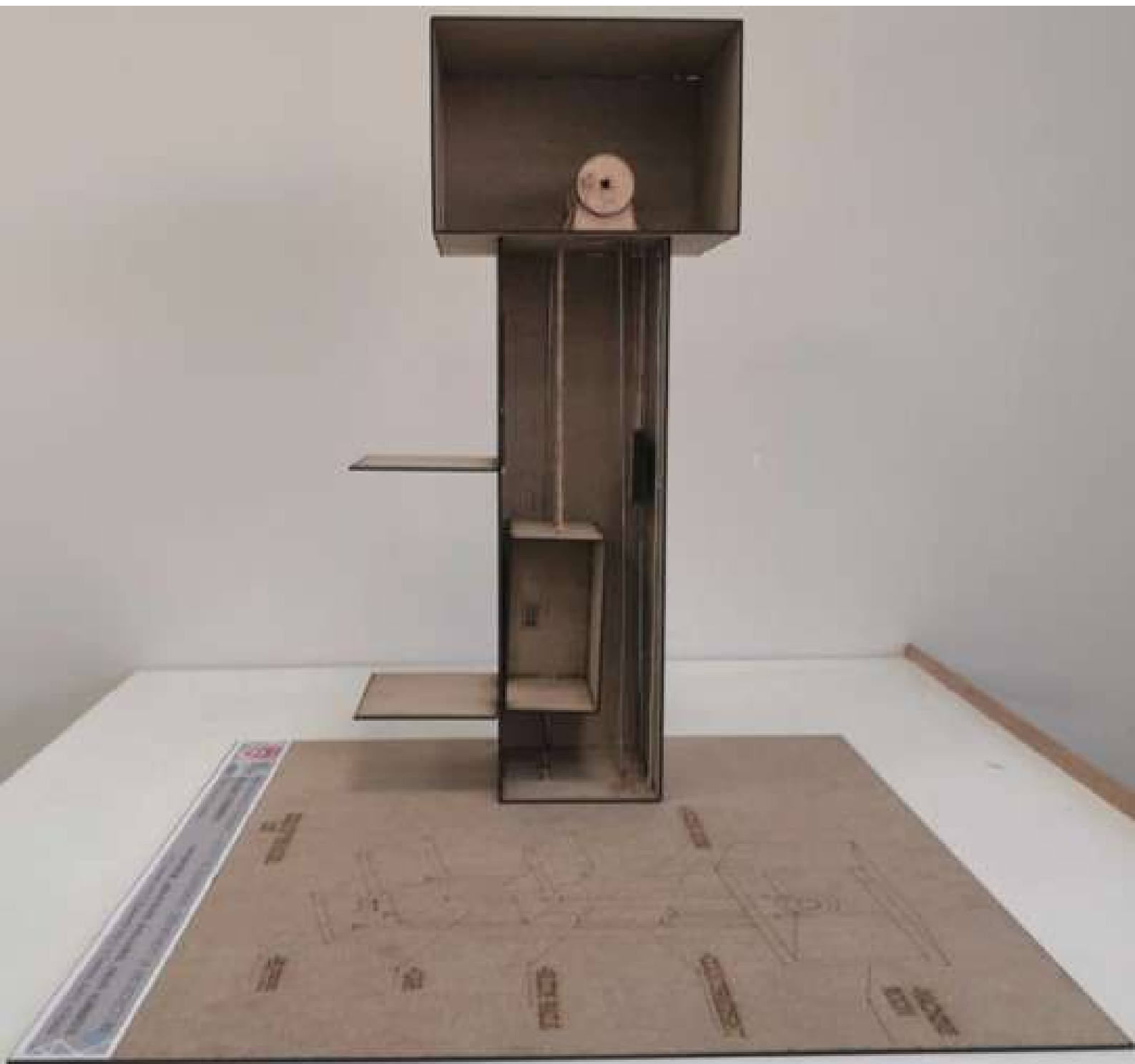


## BLUE PRINTS

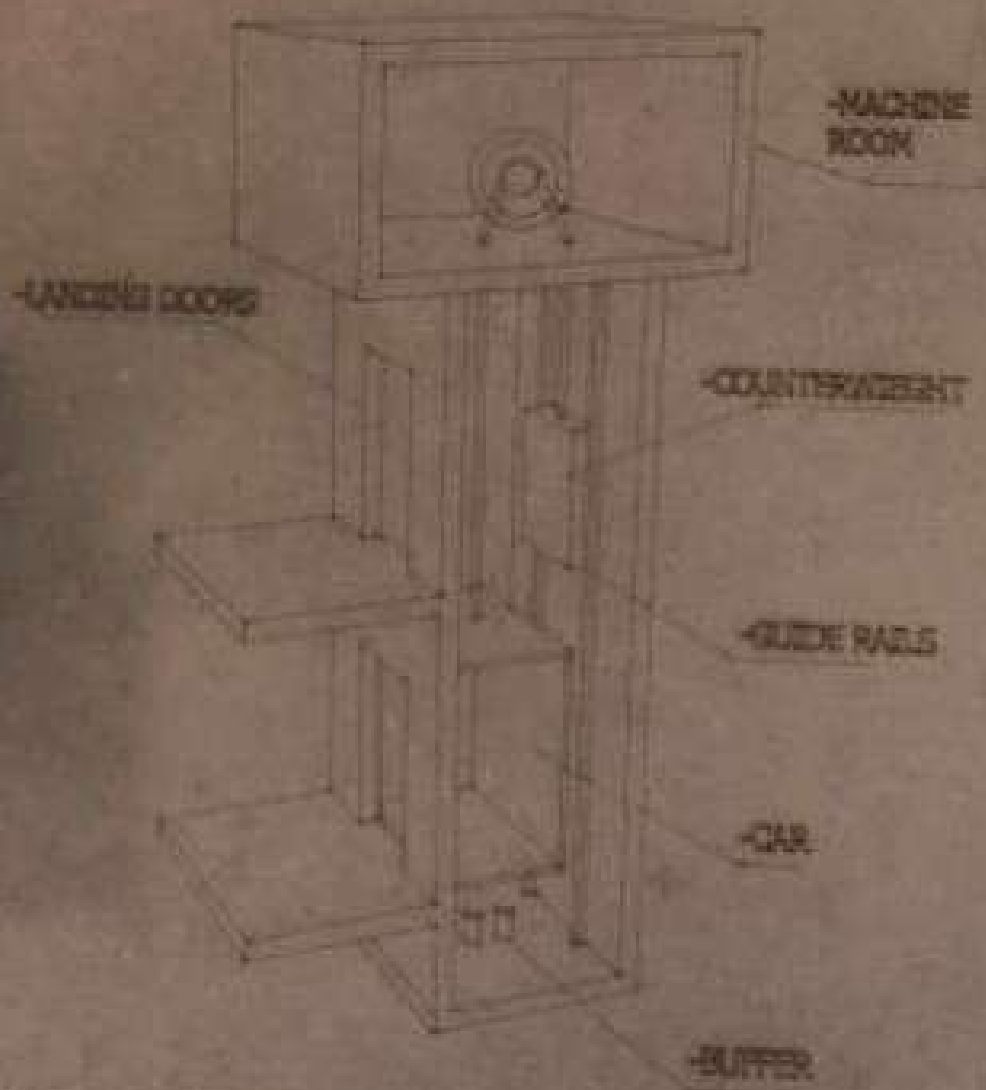












SCALE OF THE MODEL  
1:20



3 Year  
Bachelor

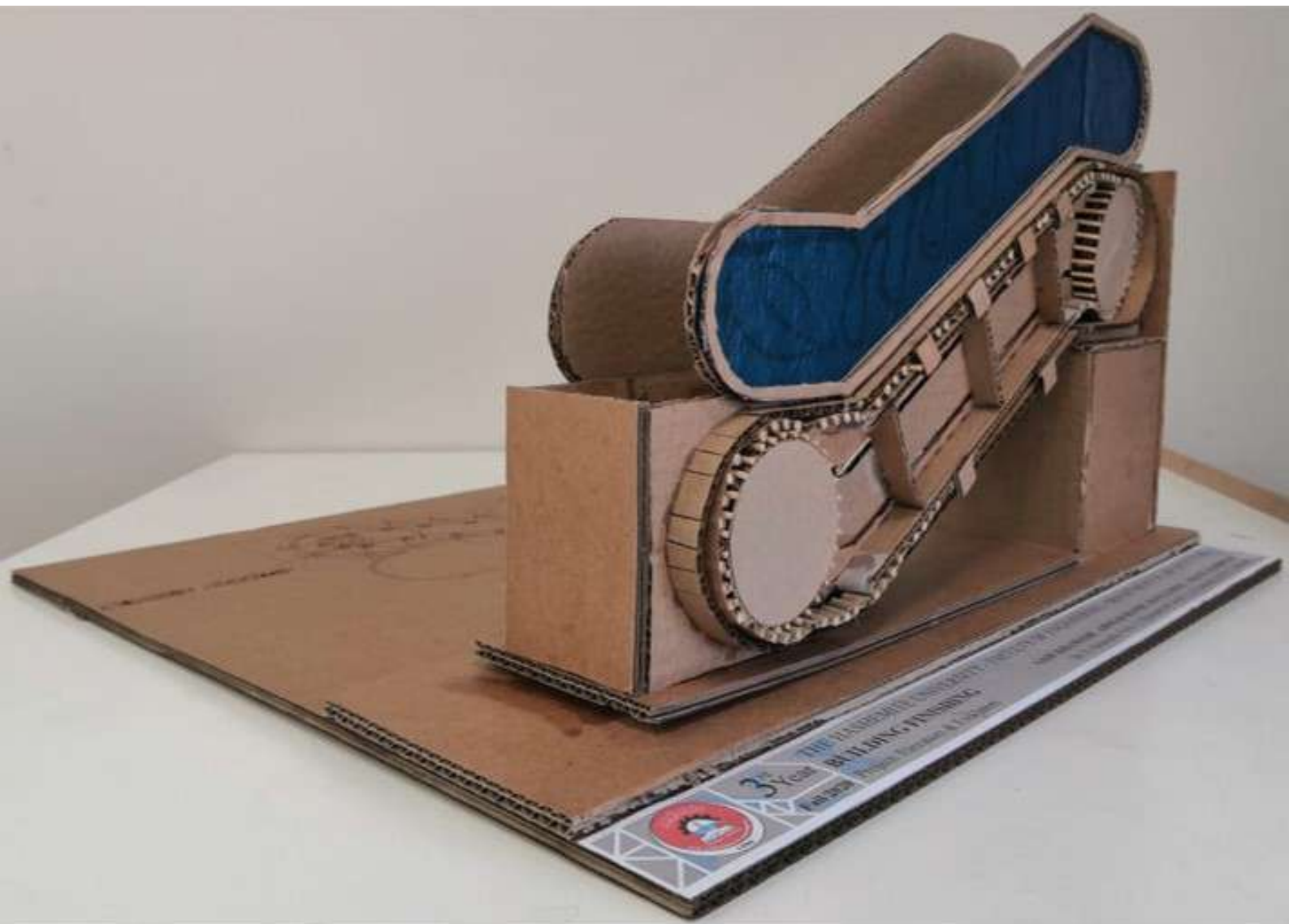
THE HASHEMITE UNIVERSITY - FACULTY OF ENGINEERING - DEPARTMENT OF ARCHITECTURE

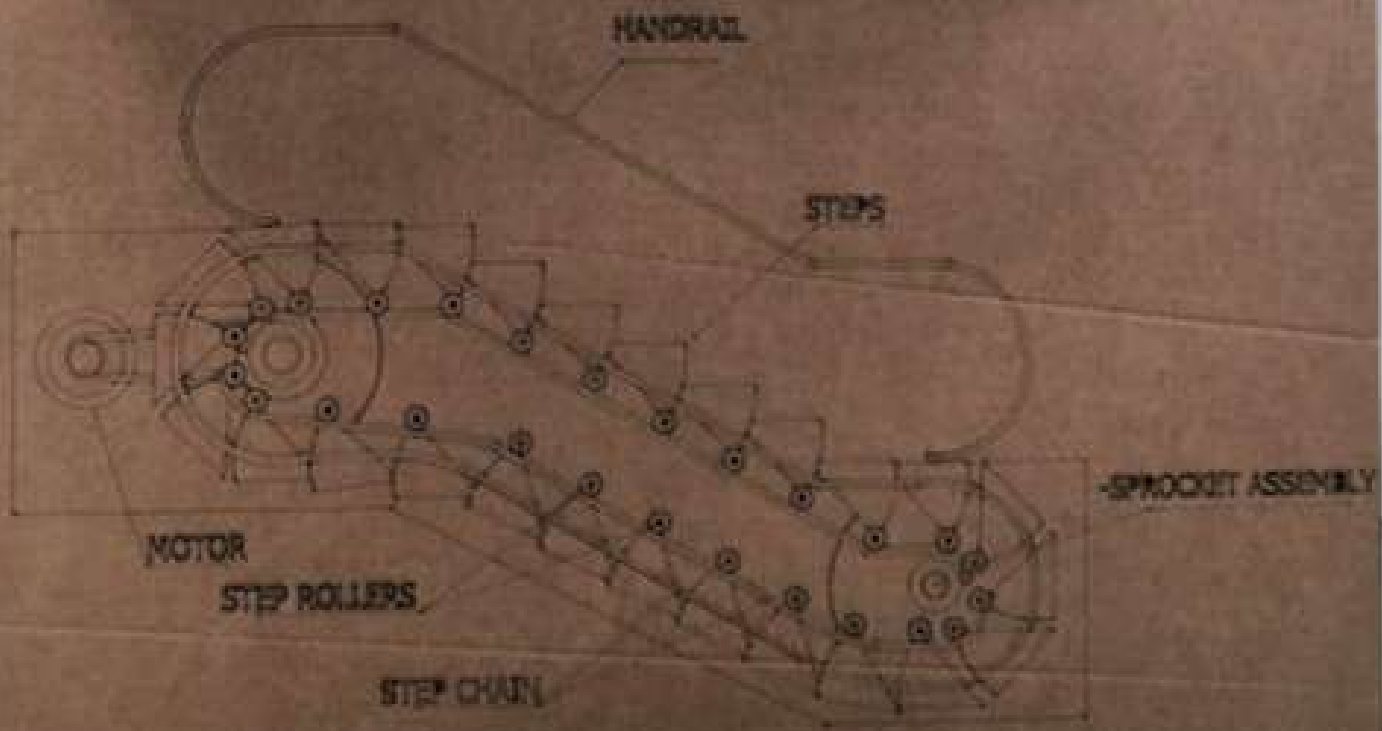
BUILDING FINISHING

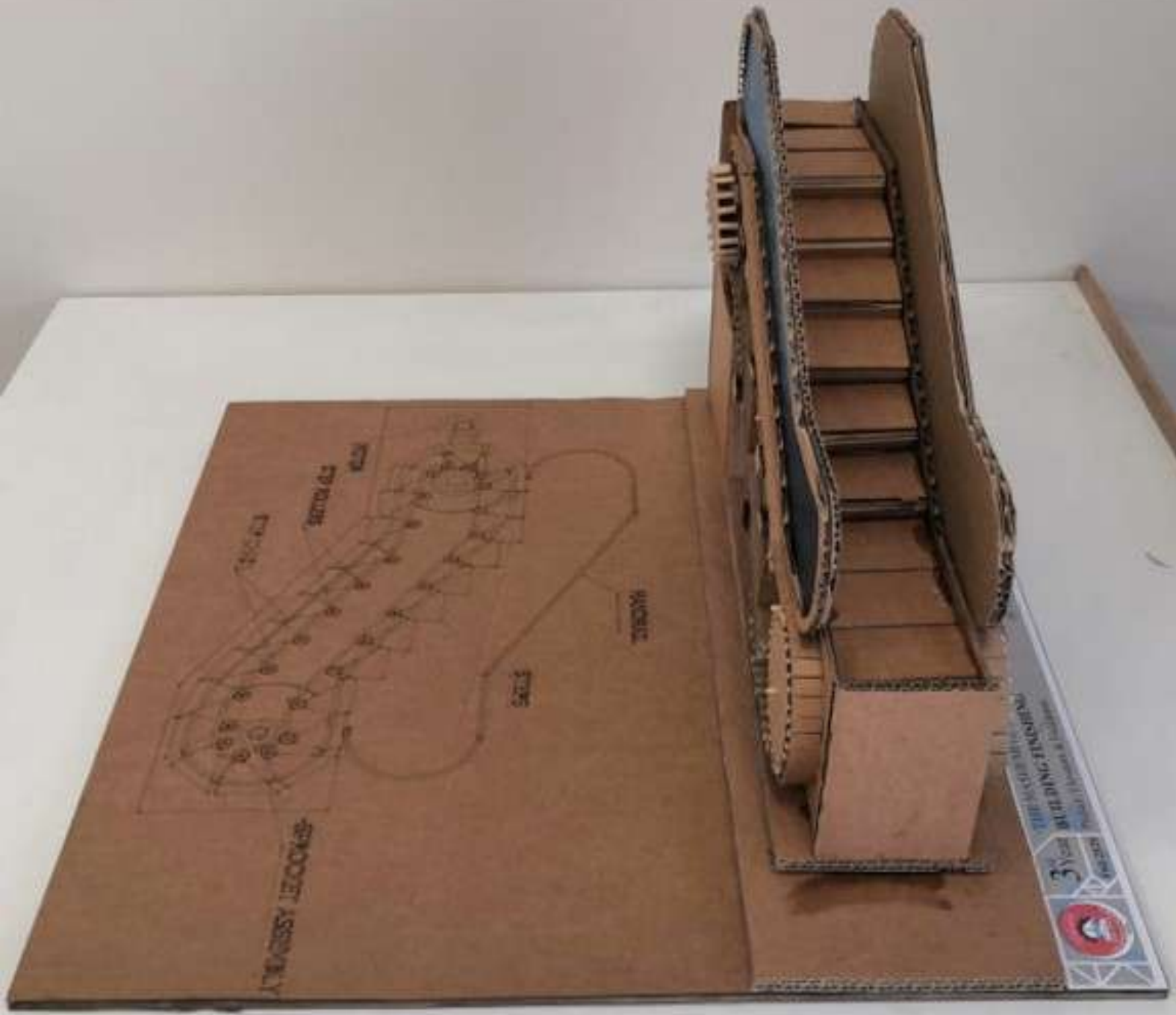
SAD KHAYMAH, AHMAD HANSI, HANA JAMAL, AMANI AYDHELM  
Dr. S. Al-Sayid, Ash. E. Khayyat, Ash. E. Al-Darwish, Ash. O. Al-Khatib



3<sup>rd</sup> Year  
EST 2028  
THE HASHEMITE UNIVERSITY - FACULTY OF ENGINEERING - DEPARTMENT OF ARCHITECTURE  
**BUILDING FINISHING**  
Professor: Elevators & Escalators  
SAIF KILAMASHI - AHMAD MANSUR - DANA JAMAL - AMANI ALBAYRAM  
Dr. H. Awawdeh, Arch. E. Khazemneh, Arch. F. Al-Tamimi, Arch. M. Al-Najjar





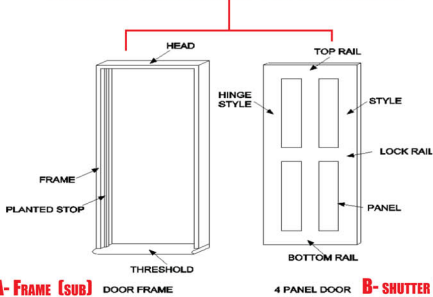




# THE DOORS

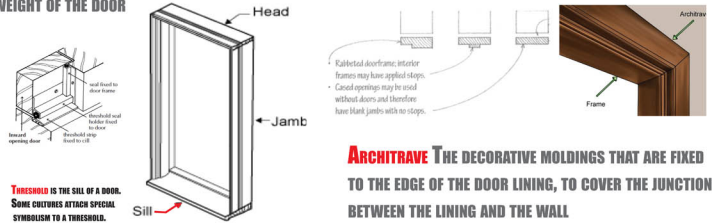
**Door: Is a panel made usually of a hard, , movable, solid, barrier and fixed to an opening in a wall with a hinge to slide open for access and exit from a building and between rooms**

## COMPONENTS OF DOORS



**FRAME :** THIS TYPE CONSISTS OF A FRAME IN A SUFFICIENTLY A CROSS SECTION FILLED ON ONE FACE TO SUPPORT THE WEIGHT OF THE DOOR

**Door stops (Rabbet):** IS THE PROJECTING PART OF A DOOR FRAME AGAINST WHICH A DOOR CLOSES TO ELIMINATE DOORS FROM OPINING IN TWO DIRECTIONS.



**Architrave** THE DECORATIVE MOLDINGS THAT ARE FIXED TO THE EDGE OF THE DOOR LINING, TO COVER THE JUNCTION BETWEEN THE LINING AND THE WALL

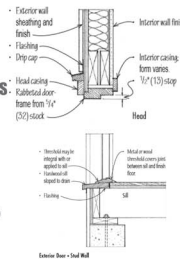
A- FRAME (SUB) DOOR FRAME      4 PANEL DOOR      B- SHUTTER (MAIN)

## DOOR FRAME TYPES



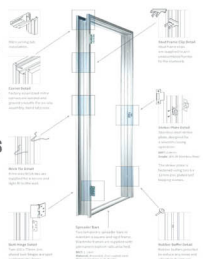
### A-TIMBER DOOR FRAME

ARE ASSEMBLED FROM THREE MEMBERS FOR INTERNAL DOORS AND FOUR TO MOST EXTERNAL DOORS . THE COMPONENTS FRAME ARE USUALLY CU WITH REBATE TIMBER AS DOOR STOP BECAUSE THE FRAME CARRY



### B- METAL DOOR FRAME

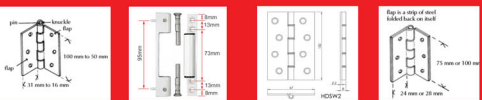
-METAL FRAME ARE MANUFACTURED INTO ONE OF THREE STANDARD PROFILES -THE SAME PROFILE IS USED FOR HEAD AND JAMBS OF THE FRAME -STEEL MEMBERS ARE WELDED TOGETHER AT ANGLES



## DOOR HARDWARE COMPONENTS

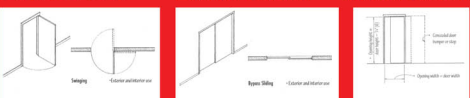
HINGES    LATCHES AND LOCKS    ROCK BOLT    AUTOMATIC CLOSERS

PRESSED BUTT STEEL HINGE (BOTTOM LOCK)      DOUBLE PRESSED STEEL HINGES

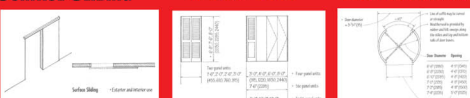


## TYPES OF DOORS

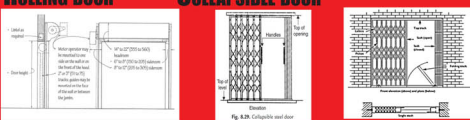
SWINGING DOOR    BYPASS SLIDING    POCKET SLIDING



SURFACE SLIDING    FOLDING DOOR    REVOLVING DOOR



ROLLING DOOR    COLLAPSIBLE DOOR



## CONSTRUCTION OF THE DOORS

- 1-CHECK THE DIMENSIONS : -DOOR OPENINGS -DOOR FRAME
- 2-INSTALL THE SUB FRAME
- 3-INSTALL THE MAIN FRAME
- 4-CHECK THE PARALLELIZATION FOR FRAME
- 5-COMPARE THE DIMENSIONS OF THE FRAME AND THE SHUTTER
- 6-PREPARE THE SHUTTER
- 7-INSTALL THE SHUTTER

## JORDANIAN CODES

### MANGOUR BUSINESS

1. IN THE CASE OF FOREIGN TRADE (THE SHUTTERS), THE CHALDEAN WOOD IS USED, WHERE THE THICKNESS OF THE FEATHERS IS ABOUT 15 MM, AND IN WOOD INTENDED FOR INTERNAL USE, 10-12% AND SUNSHADES FOR THE DOOR. THE HANDLES ARE ABOUT 10 CM LONG.

2. THE MOISTURE CONTENT OF WOOD INTENDED FOR USE IN THE OUTDOOR VAULT SHOULD NOT EXCEED 12% 615, AND IN WOOD INTENDED FOR INTERNAL USE, 10-12% AND SUNSHADES FOR THE DOOR. THE HANDLES ARE ABOUT 10 CM LONG.

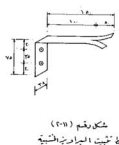
### METHOD OF FIXING WOODEN FRAMES (HOOPS):

1. THE FRAME IS CONNECTED TO THE WALL BY BEAMS OF METAL FASTENERS (WEDGES 3 MM THICK, 12-15 CM LONG AND 3-5 CM WIDE.

2. A HOLE MUST BE LEFT IN THE BUILDING GREATER THAN THE SIZE OF THE FRAME ON BOTH SIDES, AT EQUAL DISTANCES, NOT MORE THAN 80 CM

3. IT IS PREFERABLE TO INSTALL THE TIRE IN ITS LOCATION AFTER THE COMPLETION OF CONSTRUCTION, AFTER WHICH THE PITS ARE FILLED WITH CEMENT

MORTAR IN A RATIO OF 1:3 AND THEN LEFT TO DRY FOR A PERIOD OF NOT LESS THAN 7 DAYS WITH WATERING IT CONTINUOUSLY WITH WATER AND SUNSHADES FOR THE DOOR. THE HANDLES ARE ABOUT 10 CM LONG.



### PRESSING DOORS)

1. THE WIDTH OF THE SINGLE DOOR LEAF OF THE PLYWOOD SHALL BE (75,70,90,80,100 CM) SO THAT THE SPACE OF THE WALLS IS (85,80,90,100,110 CM) AS SHOWN IN THE BUILDING PROJECTIONS.

2. THE WOOD USED IN THE MANGOUR IT MUST ALSO BE COMPLETELY DRY AND THE HUMIDITY RANGES BETWEEN 10-12% AND HAS NO TRACE OF TWISTING OR BENDING.

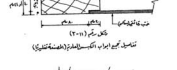
3. THE WOOD FIBERS SHALL BE IN TWO OPPOSITE AND PERPENDICULAR ADJACENT LAYERS WITH A THICKNESS OF ABOUT 5 MM.

4. THE DOOR FRAME SHALL BE MADE OF BEECH WOOD MEASURING 4.5 x 3 CM, SORTED AND INSERTED INTO WOODEN PEGS CALLED AL-QESH, MADE OF SWEDISH WOOD WITH DIMENSIONS 7x3.5 CM.

5. THE DOOR IS FIXED BY IRON PEGS (WEDGES) ON EACH SIDE OF 0.3 x 3 x 15 CM DIMENSIONS.

6. AS FOR FROM THE BOTTOM BELOW THE LEVEL OF THE TILES, THE RING IS CONNECTED FROM THE TWO SIDES TO EACH OTHER WITH AN ANGLE OF IRON 30 x 3 x 30 MM AND THE WIDTH OF THE DOOR AND THAT IS TO INSTALL THE RING COMPLETELY.

7. AN ALUMINUM PLATE SHALL BE INSTALLED AT THE BOTTOM OF THE DOOR ON BOTH SIDES, 10 CM HIGH AND 1 MM THICK.



### B- THE SACHET DOORS

\* THE FRAME IS MADE OF REGULAR WOOD, CONSISTING OF A FRAME COMPOSED OF VERTICAL AND HORIZONTAL LOGS

1. WOODEN HORIZONTAL LINES WITH A WIDTH RANGING BETWEEN 3-5 CM AND THE DISTANCE BETWEEN EACH ONE OF THEM RANGES FROM 5-6 CM

2. THE FINAL THICKNESS OF THE CORE AND FOR ALL LAYERS RANGES FROM 4-6 CM, DEPENDING ON THE DIMENSIONS OF THE DOOR, THE DURABILITY REQUIRED FOR USE AND THE RESISTANCE TO WEATHER CONDITIONS.



### REFERENCES

GENERAL SPECIFICATIONS BOOK FOR BUILDINGS THE JORDANIAN NATIONAL BUILDING CODES





ARCHITRAVE

HEAD



FRAME ( SUB )

Lug ↓

SHUTTER ( MAIN )



FRAME ( SUB )

Lug ↓

SHUTTER ( MAIN )



FRAME ( SUB )

Lug → ↓

SHUTTER ( MAIN )





**ARCHITRAVE**

**FRAME ( SUB )**

**SHUTTE**

