# AL MUSTAQBAL MADRASSA

**Project:** BOUINT01P
**Teacher:** Kees van W.
**Date:** 01-07-2024

# ANALYSIS

## LOCATION

**Space requirements and suitability:**
- Merging mosque and primary school.
- An area of (at least) 2000 m2 (approximately)

**Social safety and location:**
- a supermarket within 15 minutes walking distance
- a restaurant
- There is a playground just behind the location that children can use.
- The entertainment venues are easily accessible by car. The location is about 20 minutes by car from the center of Azaz.

**Nuisance**:
- A dry area with trees planted
- The soil consists of sand and clay
- The area is very remote, which makes it a quiet place for a religious meeting.


*Image 1*

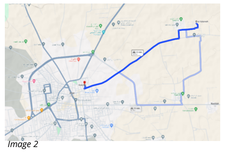


*Image 2*

*Image 3*

**Environment and atmosphere:**
- For example, you have a nightclub and a park along the highway.
- Opposite there is also a trade fair and conference centre.
- Not many facilities within walking distance.

## ARCHITECTURE

**Features:**
- Square
- Round arches
- Inner courtyard
- Convex roofs
- Decoration
- Column construction with load-bearing outer wall

The Madrassa is a school for religion in Syria. In this style, many straight lines with pointed arches and narrow open windows can be seen. There is much decoration from tiles to sculptures. The buildings are in a square shape with a courtyard, because of the high walls, little daylight comes in, this creates a cold place. The buildings often have towers.


*Image 7*

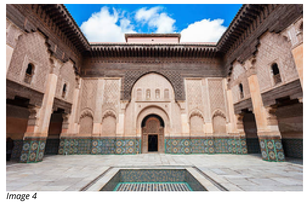


*Image 4*


*Image 5*


*Image 6*

## CLIMATE

| | maximum temperature | minimum temperature | hours sunshine per day | days precipitation per month | amount of precipitation per month |
|---|---|---|---|---|---|
| january | 10°C | 0°C | 5 | 14 | 💧💧💧💧 |
| february | 11°C | 1°C | 6 | 12 | 💧💧💧 |
| march | 15°C | 3°C | 7 | 11 | 💧💧💧 |
| april | 20°C | 6°C | 8 | 8 | 💧💧 |
| may | 25°C | 9°C | 10 | 5 | 💧 |
| june | 29°C | 12°C | 12 | 2 | NIHIL |
| july | 32°C | 14°C | 13 | 0 | NIHIL |
| august | 32°C | 14°C | 12 | 0 | NIHIL |
| september | 29°C | 12°C | 10 | 1 | NIHIL |
| october | 24°C | 9°C | 8 | 6 | 💧 |
| november | 17°C | 4°C | 7 | 8 | 💧💧 |
| december | 11°C | 1°C | 5 | 12 | 💧💧💧 |

0-5 mm = NIHIL | 6-30 mm = 💧 | 31-60 mm = 💧💧 | 61-100 mm = 💧💧💧 | 101-200 mm = 💧💧💧💧 | more than 200 mm = 💧💧💧💧💧

*Image 8*

## SUSTAINABLE DEVELOPMENT GOALS

*Image 9*

Summers in Syria are very hot and dry, temperatures can reach 32 °C. In winters, 61 to 200 mm of rain falls per month. We want to collect this rain in the winters so that we can use it in the summer. We are going to use an underground water tank. The water we collect will not freeze because the temperature in Syria does not fall below zero. So we will use water sustainably.

*Image 10*

We would like to place trees next to the building. We chose the pine tree because it grows well in a dry climate. The pine tree can grow 10 to 15 meters. Because this tree is so tall, the building gets more shade. This makes it a more pleasant temperature for students and teachers.


*Image 12*

*Image 11*

We offer quality education to the children in the neighborhood. The building in which they learn is of good quality. The indoor climate has been taken into account through ventilation. The teachers who will teach are educated.

## TYPICAL MATERIAL

**Construction: Concrete poured in situ**
- Strong
- High production speed
- Durable

**Walls and interior walls: Concrete blocks**
- Affordable
- Avarage Insulation
- Easy to produce

**Wall finish: Clay plaster**
- Good thermal insulation
- Environmentally friendly

**Floor/Wall finish: Mosaic tiles**
- Rich in design
- Easy to maintain
- Aesthetically pleasing

**Window frames: Wood**
- Traditional
- Long-lasting
- Easy to work with

## SCHEDULE OF REQUIREMENTS

Quantitative

Primary school

| Function | Amount | m² | Total m² |
|---|---|---|---|
| Classrooms | 22 | 45 | 990 |
| Teacher's rooms | 2 | 35 | 70 |
| Toilet teacher's | 6 | 1,08 | 6,48 |
| Toilet students | 5 | 6 | 30 |
| Canteen with kitchen | 1 | 75 | 75 |
| Computer room | 1 | 60 | 60 |
| Library | 1 | 80 | 80 |
| Laboratory | 1 | 60 | 60 |
| Director's office | 1 | 10 | 10 |

Total 1.381,48 m²

Mosque

| Function | Amount | m² | Total m² |
|---|---|---|---|
| Toilets women | 3 | 1,08 | 3,24 |
| Washing place women | 1 | 30 | 30 |
| Toilets men | 4 | 1,08 | 4,32 |
| Washing place men | 1 | 30 | 30 |
| Courtyard | 1 | 200 | 200 |

Total 267,56 m²

Primary school + Mosque = 1.649,04 m² x 1,33% = **2.193,22 m² (excl. soccer/basketball field)**

Qualititative

**Future users:**
- Primary and highschool students from 6 years till 15 years.
- Local residents.

**Outdoor design principles**
- No closed indoor area
- Mosque must be accessible from the school and outside
- No high towers due to earthquake
- 2 mosque entrances
- Recognizable entrance

**Indoor design principles school**
- 22 classrooms
- Computer room
- Library
- Laboratory
- Toilet (students)
- Children's playground
- Teachers' rooms
- Canteen and kitchen

**Indoor design principles Mosque:**
- Space men
- Space women
- Men's washroom
- Women's washroom
- Toilet
- Auditorium
- Canteen and kitchen

**Ambition location:**
- A building that is ***easily accessible*** for both students and local residents.
- The school must be easily accessible through a recognizable and unique entrance.
- The mosque invites you to use this often and to gather here.

**Program**
- The building's program should be aimed at a mix of use of an educational function and a meeting function. When using this building mix, it must be taken into account that it can be used for multiple purposes. The mosque should only be used for religious activities, because it must remain sacred.

## WAR

The war in Syria started in 2011. It is a civil war and it is still going on today. The civil war was born out of a civil uprising against the regime of Bashar al-Assad. There have been half a million deaths in Syria since the war in 2011.

13 years war in Syria. 16,7 million people in Syria need help. 7,2 million Syrians are on the run within the country's borders.
*(UNHCR,2024)*

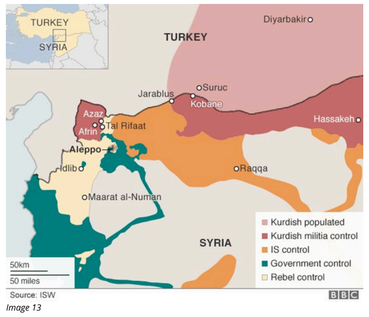


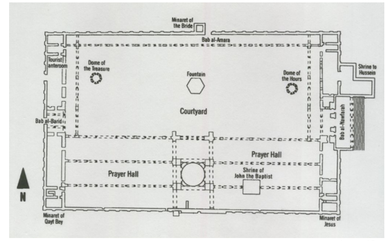
*Image 13*

## REFERENCES

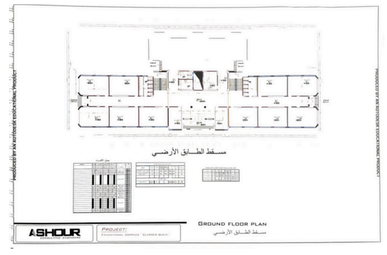
It is difficult to find floor plans in Syria. This is because of the war. The mosque in Damascus does have floor plans on the internet. This mosque is the largest mosque in Syria and is also called the Umayyad Mosque. This building is not only important because of its religious significance but also because of its architecture. We will use this mosque as a reference.


the Umayyad Mosque, Damascus *Image 14*

This drawing shows a Syrian school, this is the only floor plan we could find. We got these drawings from a Syrian student whose father is an architect in Syria. There are no floor plans of Syrian schools on the internet. The school was built in 2016 in Jaramana, Damascus.



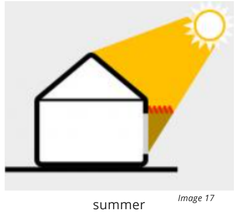
the Umayyad Mosque, Damascus *Image 15*



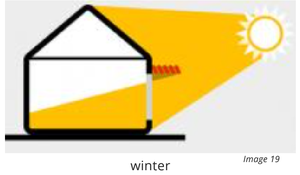
Educational complex “Classics Build", Damascus *Image 16*

## SUN

We want to use an overhang on the facade. This provides shade in the summer, so it is less hot. And in winter it ensures that the building retains more heat.


summer *Image 17*

31 july 2024 *Image 18*


winter *Image 19*

31 december 2024 *Image 20*

# AL MUSTAQBAL MADRASSA

## CONCEPT DESIGN


Ground floor




First floor

Concept Robin

- The primary school has 1 floor, group 1 to 5 are in the left part of the building. Group 6 to 9 are in the right part of the building.
- The mosque has 2 floors, the men pray downstairs and the women pray upstairs

Ground floor

First floor

Concept Solange

- There is a large, recognizable entrance that leads to a large courtyard.
- On the ground floor you have the classrooms, teachers' rooms, (teachers') toilet, canteen, computer room.

- The red part is the Mosque. At the mosque you have 2 entrances for the men (in the front) and the women (side). The mosque also has a prayer room for the man, washrooms and a canteen for people who want to use it.
- On the first floor has several classrooms. There is also a library.
- The Mosque has a prayerroom for the women.



We chose Storm's design. It came out as the best concept from the Harris Profile. We will ensure that the layout meets the schedule of requirements. We will also include the positive aspects from the other concepts in the final design.

Concept Storm

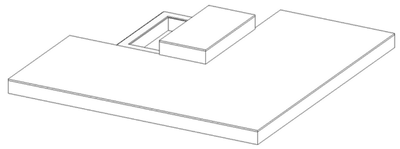
- The mosque is surounded by the schoolrooms.
- The lab and the libary sre on the first floor.
- The school is a wall voor the loud childern playing oudsite.
- there is a large square in the middel that can be used for praying.
- A dubble wall on the oudsite where the sun shines the most.

- The mosque's can be used as a the eatingplace for the cilldren older then 11
- There is an opening for a men entrance and an opening for the stairs.
- There are doors at the right side of the man mosque so they can also pray oudsite

## HARRIS PROFILE

| Concept Robin | -- | - | + | ++ |
|---|---|---|---|---|
| *Feasibility* | | | ■ | |
| *Layout* | | | ■ | |
| *Accessible* | | | ■ | ■ |
| *Building in relation to the sun* | | ■ | | |
| *Building speed* | | | ■ | ■ |

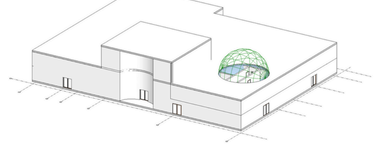
- **Feasibility:** The building is feasible to build. It is not too complicated to build.
- **Layout:** The layout of the building is well thought out. Group 1 till 5 are together and group 6 till 9 are together. The lab, the library and the computer room are rooms that group 6 till 9 would use more, therefore these are behind the classrooms of group 6 till 9. The teachers' rooms and the director's office are also separated from the classrooms.



- **Accessible:** The building is easily accessible. It has been taken into account that women and men can enter the mosque separately. Students can also enter the mosque separately from the school. The school has a spacious entrance.
- **Building in relation to the sun:** The classrooms will be in full sunlight for a long time. The spaces that will be used less, such as the library and the teachers' room, could have been placed where the classrooms are.
- **Building speed:** The building can be built relatively quickly. The school has only one floor and the mosque has two. The classrooms are the same size so repetition is possible and makes the building process faster.

| Concept Solange | -- | - | + | ++ |
|---|---|---|---|---|
| *Feasibility* | | | ■ | |
| *Layout* | | | ■ | |
| *Accessible* | | | ■ | ■ |
| *Building in relation to the sun* | | ■ | | |
| *Building speed* | | ■ | | |

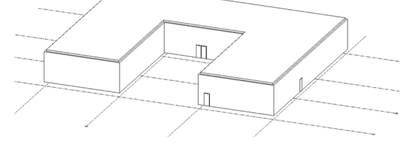
- **Feasibility:** the building has an easy shape to build. Furthermore, the entrance has a difficult shape
- **Layout:** the building has a logical layout. This is how I looked at the pipework of the toilet. and all rooms have enough space.
- **Accessible:** the building is easily accessible. The striking entrance makes it easy to enter the school. Furthermore, the mosque has a clear entrance for men and women.



- **Building in relation to the sun:** the classrooms contain enough sunlight. In addition, there is a large courtyard in the middle of the building that can also provide enough light to the other classrooms. I also added a lot of light through the windows in both prayer rooms.
- **Building speed:** the building has a simple shape. but despite that, it does have a longer build speed. This is because the building has a unique entrance and two floors, both at the mosque and in the school.

| Concept Storm | -- | - | + | ++ |
|---|---|---|---|---|
| *Feasibility* | | | ■ | |
| *Layout* | | ■ | | |
| *Accessible* | | | ■ | ■ |
| *Building in relation to the sun* | | | ■ | ■ |
| *Building speed* | | | ■ | |

- **Feasibility:** The building is feasible to build. The building consists of 2 floors and the shapes of the building are not too difficult.
- **Layout:** The layout of the building does not fully meet the schedule of requirements.
- **Accessible:** The building is accessible. It has a very open appearance because there is a kind of second open facade in front of the building. There is an entrance to the school building in the middle.



- **Building in relation to the sun:** The "second facade" with large openings creates a lot of shade on the building. This facade is on the sides where the sun shines. The sides where the sun does not shine do not have this facade.
- **Building speed:** The building speed is quite fast, as the building is not super complicated. Many rooms have the same dimensions, so repetition is possible.

## LOGISTICS

The school and mosque construction project is located next to the major city of Aleppo. In Azaz, the town where the construction site is located, the construction site is a 20-minute walk away, close to the village of Al-Salameh.

By taking factors such as sustainability, the Syrian economy and construction speed into account as much as possible, it is very important to ensure logistics transport from Syria.


*Image 28*

**Transport roads**

Many of the highways in Syria leading to the future construction site are inoperative or destroyed. This is due to the 13 year war that is currently going on. The conflict has therefore caused a lot of damage to bridges, roads and buildings. This hinders the transport of materials and equipment to the construction site. Unfortunately, the railways in Syria are no longer accessible for transporting heavy elements. See figure 1 for a number of safe mapped out routes.

In addition, transport could in any case also take place from the second most modern port city in Syria, Tartous.
**Blue Route:** Latakia -> Jableh -> Baniyas -> Tartous -> Hama -> Aleppo (M1 & M4 & M5)
This route passes through areas controlled by the Syrian government
**Pink Route:** Tartous -> Hama -> Aleppo (M5)
This route is quite well secured and is therefore a safe route to transport elements.
**Green Route:** Damascus -> Homs-> Hama -> Aleppo (M5)
Relatively safe route for transportation.
**Orange Route:** Al Hasakah -> Ar-Raqqah -> Aleppo (M4)
Depending on government control, this is a well-secured route.
**Red: The border**

**Safety**

We have heard from a reliable source (Ashour Architect) in Syria that northwest Syria, where the construction site is located, has few or no problems and is therefore a lot safer than a few years ago. In any case, it is important to clarify certain safety conditions for the construction project

**Measures:**
1- Establishing an evacuation plan for emergency evacuation is an important preparation that must be made before the project starts.
2- Wear Personal Protective Equipment (PPE) such as helmets, safety shoes and safety glasses.
3- Regularly monitoring safety situations during the construction process to evaluate improvements.
4- Ensuring continued open communication between suppliers, local authorities and employees.

**Construction site**

- Accessibility and reachability
- Construction shed and billboard
- Storage of materials and large equipment
- Waste containers
- Scaffolding
- Connection points for electricity and water
- Safety/ site separation
- Parking lots

**North arrow**

From the Coordinates 36°36'16.1"N 37°05'01.4"E of the construction site to the Ka'ba in Mecca it is approximately 170 degrees.

This means that you should pray from the location towards the southeast to face the Ka'bah


# AL MUSTAQBAL MADRASSA

## VENTILATION

### Earth air ventilation system

In this project, we are utilizing PVC pipes installed underground. This innovative system offers numerous benefits, from energy efficiency to improved air quality. The decision to use PVC pipes was made because mechanical ventilation is challenging to implement in Azaz due to war, earthquakes and money.

**What is Ventilation with PVC Pipes in the Ground?**
Ventilation with PVC pipes in the ground, also known as ground pipe systems or Earth-Air Heat Exchangers, uses underground PVC pipes to cool or heat air before it enters the building. These pipes are buried at a depth of several meters, where the temperature remains relatively constant throughout the year.

**How Does the System Work?**
***1. Air Inlet:*** Outside air is directed into the underground PVC pipes through an air inlet.
***2. Temperature Regulation:*** As the air flows through the underground pipes, it takes on the temperature of the surrounding soil. In the summer, the air is cooled, while in the winter, the air is warmed.
***3. Air Supply***: The tempered air is then directed into the building, where it can be further distributed by the ventilation system.

**Benefits of Ventilation with PVC Pipes in the Ground**

- E***nergy Efficiency:*** Since the air is pre-cooled or pre-warmed before entering the building uses less energy
- ***Improved Air Quality:*** The system can contribute to better indoor air quality by bringing in fresh outdoor air while reducing pollutants.
- ***Comfort***: The system provides a constant supply of tempered air, contributing to a more stable and comfortable indoor climate.
- ***Sustainability***: Using underground pipes reduces reliance on fossil fuels and contributes to a lower ecological footprint.

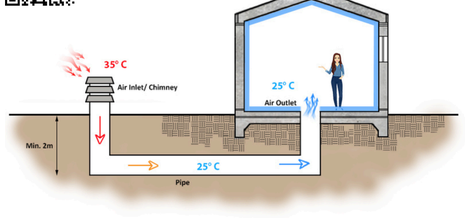


Image 21

### Solar Chimneys

In addition to the earth air system, we will also use solar chimneys to accelerate and optimize ventilation. A solar chimney is a passive ventilation system that uses heat to enhance airflow within the building. The solar chimney is made of black painted concrete to absorb as much solar radiation as possible. The operation is as follows:

***1. Absorption of Solar Energy***: The solar chimney absorbs solar radiation and heats the air inside the chimney.
***2. Heating and Rising of Air:*** As the air in the chimney heats up, all the polluted air rises up in the chimney.
***3. Creating a Pressure Difference:*** The rising warm air creates a pressure difference that draws cooler outside air into the building through our ventilation system, which comes in via the PVC pipes.
***4. Continuous Airflow***: The continuous rising of warm air and the inflow of cooler air create a natural ventilation cycle that promotes airflow throughout the building.

**Benefits of Solar Chimneys**

- ***Improved Indoor Air Quality***: By promoting constant airflow, solar chimneys help remove indoor pollutants and improve air quality.
- ***Low Maintenance Costs:*** With no moving parts, solar chimneys require minimal maintenance compared to mechanical systems.
- ***Sustainability***: By utilizing renewable solar energy, solar chimneys contribute to the sustainability of a building and reduce its ecological footprint.

### Ventilation with clay

Although clay is not directly used as a material for ventilation, it can play a role in ventilation systems or contribute to a healthy indoor climate due to its unique properties.

Clay has special properties. it can absorb and release moisture, helping to regulate humidity levels within a building. Stable humidity levels contribute to better air quality and comfort.

Clay can also act as thermal mass, which helps stabilize indoor temperatures. When clay is used in walls or floors, it can store and slowly release heat. This can reduce the need for active ventilation and air conditioning, as the building naturally cools and heats itself.

We particularly want to take advantage of the thermal mass property. Therefore, we have incorporated clay ventilation strips into our walls, as shown in the image on the right.

## EARTHQUAKE

Our building site is located in Azaz in northwestern Syria, which is situated in a seismically active region. The proximity to major fault lines, such as the North Anatolian Fault and the Dead Sea Fault, as shown in the adjacent image, indicates a significant earthquake risk for our construction project. Therefore, it is crucial to employ earthquake-resistant building techniques and to be prepared for seismic activity to ensure the safety of the population.

Image 25

## SOIL

The ground on which we are going to build is a mix of clay, sand, and silt. This means that it is very well possible that we need to place the building on piles. We have chosen to build on piles anyway because building on piles has advantages when it comes to earthquake resistance.

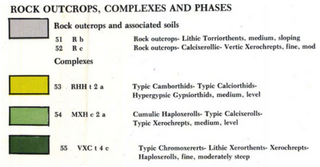


Image 27

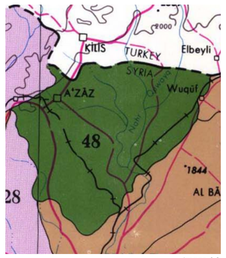


Image 26

## LOGISTICS

**Supplier**

- The largest timber suppliers in Syria are barely recognizable due to the consequences of the war. That is why choosing a Turkish wood supplier is a sensible option for now.

- Albir AS is located in Kayseri, Turkey. This supplier is active in the import-export of wood sector

- Finding a concrete supplier is much easier in Syria. This is because the traditional construction method in Syria is concrete.

- Homs Cement Company is located in Homs, Syria. This is an old supplier in Syria with good expertise in concrete construction methods

- For the construction of the dome, we are looking for a supplier who produces recycled cardboard tubes. Unfortunately, this is difficult to find out due to the conflicts in Syria, which is why we opted for a supplier from Turkey.

- Ari Tüp is an ideal supplier for our construction project

**Machines**

**Hidromek, Turkey**

**Concrete mixer**
Can be used to create concrete for construction projects.

**Truck**
It can be used to transport large quantities of goods and materials over long distances efficiently.

**Digger**
A digger can be used to dig holes, and foundations, lift and move heavy materials, and perform demolition and grading tasks on construction sites.

**Mobile crane**
A mobile crane can be used to lift and move heavy materials or equipment at construction sites and other locations.

## CONSTRUCTION METHOD

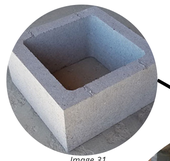
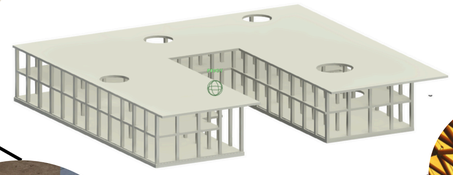


Image 31


Concrete frame construction

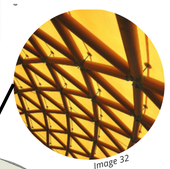


Image 32


Image 29

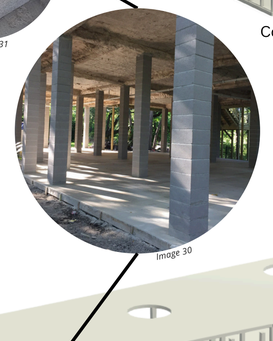
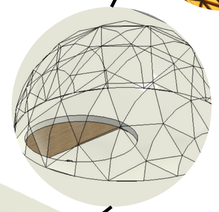


Image 30





Concrete frame construction (exploded view)

After conducting some research on the various construction methods used in Syria, we quickly discovered that concrete is predominantly used. Concrete can be processed in various ways. After analyzing this, we realized that efficiency could be improved in certain areas. Therefore, we have introduced several optimizations to the construction methods in sections 3, 4, and 5.

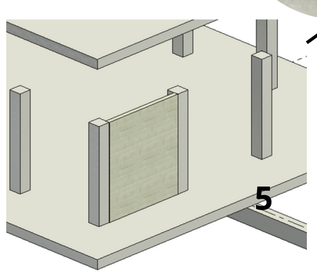
**1 & 2. Foundations and Floor**
The foundation beams and floors are constructed using traditional building methods. The formwork for the foundation beams is made of wood and the open spaces of the foundation will be filled with local stones. The floors are supported by props as a temporary load-bearing structure; the edge formwork and edge protection are made of wood. The advantage of traditional methods is that contractors in Syria all have the knowledge and skills required, and wood is a readily available building material in the area.

**3. Columns**
In Syria, almost all columns are traditionally poured using wooden formwork. The drawback of this method is that the wood usually has no function after formwork removal, and there is a chance that the columns may not be perfectly straight. An alternative is to use stacked concrete blocks filled with concrete and reinforcement. The blocks act as formwork, requiring less labor and ensuring straight columns.

**4. Domes**
For the mosque dome, we propose using a reusable dome. This dome is made of cardboard filled with sand and connected with steel fasteners. This idea, developed by Japanese architect Shigeru Ban, was realized in 2004 in collaboration with our supervisor Kees van Wuyckhuyse in Utrecht. The advantage of this method is that the dome is reusable and does not require large equipment. Additionally, its construction and weight make it more earthquake resistant.

**5. Facades**
The current concrete facades in Syria are mostly traditionally stacked with concrete blocks. Considering the earthquake-prone nature of the area, we recommend using VAD-VAD blocks. These concrete blocks can be stacked without mortar, which prevents cracks in the walls during earthquakes. Additionally, VAD-VAD blocks can be reused for other projects in the future, contributing to sustainability.


Image 33




## CONSTRUCTION METHOD

In our new construction project, we will be using an advanced Base Isolation System for the foundation. This innovative system will allow us to protect the structure optimally against the damaging effects of earthquakes.

**What is a Base Isolation System?**
A Base Isolation System is an advanced seismic isolation technique used to protect buildings from earthquake shocks. The system works by separating the building's foundation from the above-ground structure, significantly reducing the impact of seismic waves. This is achieved by installing flexible isolators between the foundation and the structure, which absorb and dampen movements.

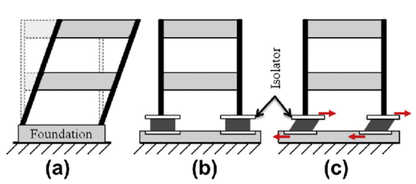


Image 22

**Benefits of a Base Isolation System**

- ***Earthquake Protection:*** The primary benefit of a Base Isolation System is the significant reduction of structural damage during an earthquake. By absorbing shock waves, the building's construction remains intact.

- **Increased Safety:** By isolating the vibrations of an earthquake, the risk of collapse or severe structural damage is drastically reduced. This ensures a safer environment for the occupants and users of the building.

- ***Reduced Maintenance Costs***: Earthquakes can cause significant damage that requires expensive repairs. A Base Isolation System minimizes this damage, resulting in substantial long-term cost savings.

**Potential Drawbacks of a Base Isolation System**

- ***Higher Costs:*** The installation of a Base Isolation System involves significant upfront costs, including the price of the isolators and the specialized construction techniques required. This can make the costs higher compared to traditional foundation methods.

- ***Maintenance Requirements:*** Although the system reduces overall damage, the isolators themselves require inspection and maintenance to ensure they function correctly over the long term. This ongoing maintenance can increase the lifecycle costs of the building.

- ***Design and Engineering Complexity:*** Implementing a Base Isolation System requires advanced design and engineering expertise. This complexity can extend the planning phase and may require the involvement of specialized professionals, potentially increasing the project's timeline and costs.

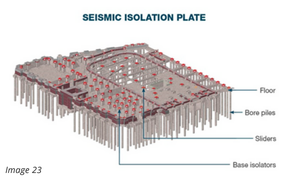


Image 23

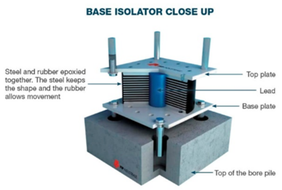


Image 24

# AL MUSTAQBAL MADRASSA

In the design, several principles have been incorporated. The principles are as follows:

- The functions within the building: the mosque and the school.
- The climate and temperature.
- Earthquakes.

In the design, we have taken the two functions into account to ensure they work well together. The mosque is accessible from both within the school and from outside. Men enter from the front, and women enter from the back to keep them separated.

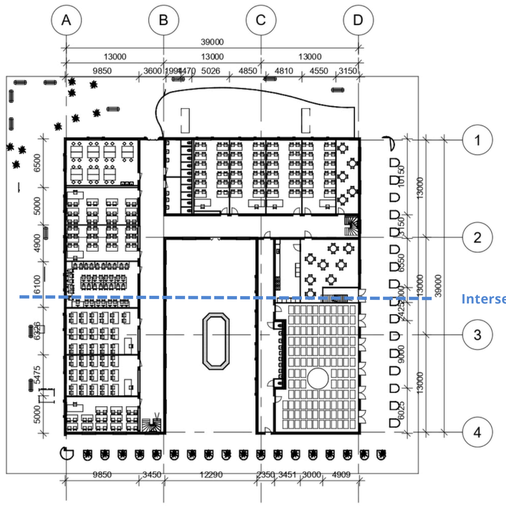
Furthermore, the building has two distinct faces. When viewed from the top left, it looks different than when viewed towards the mosque. The school side features a blue pattern, while the mosque side has a traditional mosque appearance with arches and decorations. There is also a dome on the roof of the mosque section.

To address the climate, a double facade has been installed on the sides of the building that receive the most sun exposure. This was not done on one side, where the children play, as the sun only reaches there after 4 PM, making it safer for the children. For temperature control, clay has been incorporated into the walls to provide cooling through the wind. Additionally, there are openings on the roof that can be adjusted, covered with a shade structure to prevent direct sunlight from entering.

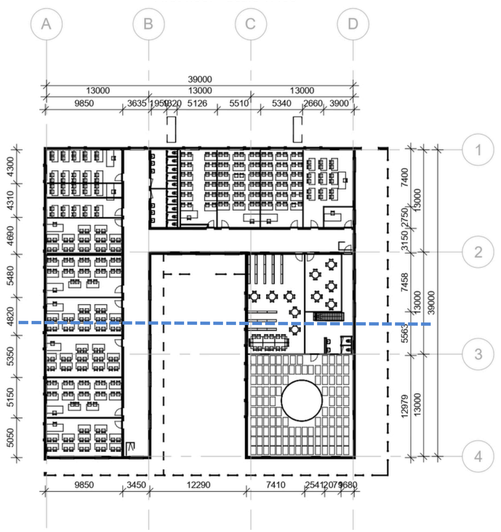
Regarding earthquakes, we opted for a building no taller than two stories and avoided tall towers commonly seen in mosques for safety reasons.

The interior is designed so that the two functions do not interfere with each other but can still coexist. The mosque is accessible from both inside and outside, with women having their own entrance. The men's section of the mosque can be expanded by opening side doors. When the mosque is not in use, the children can use the space for lunch as the kitchen next to it will be open.

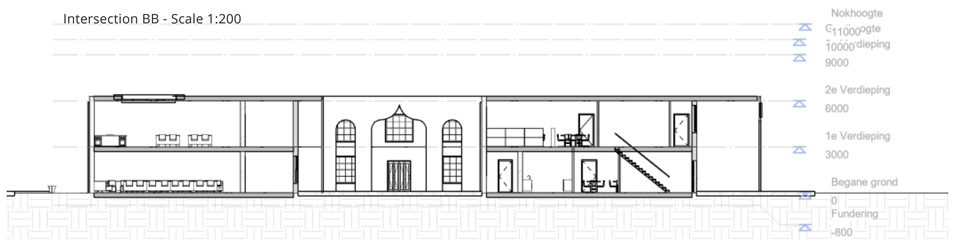
Ground floor - Scale 1:400

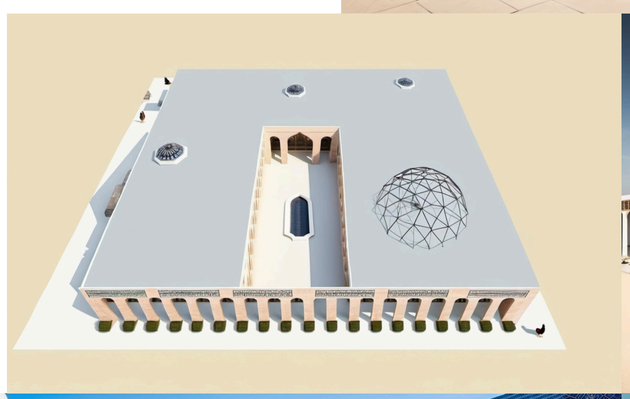


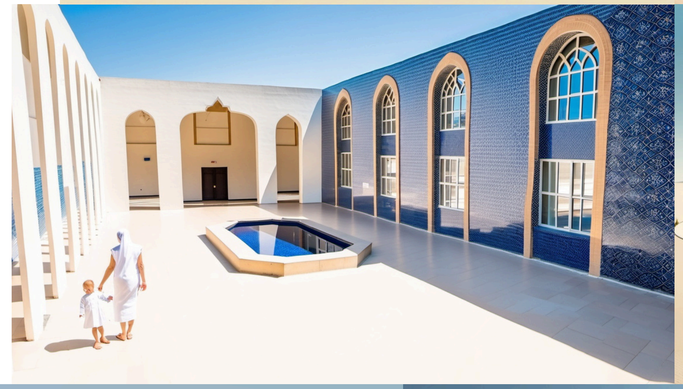

First floor - Scale 1:400

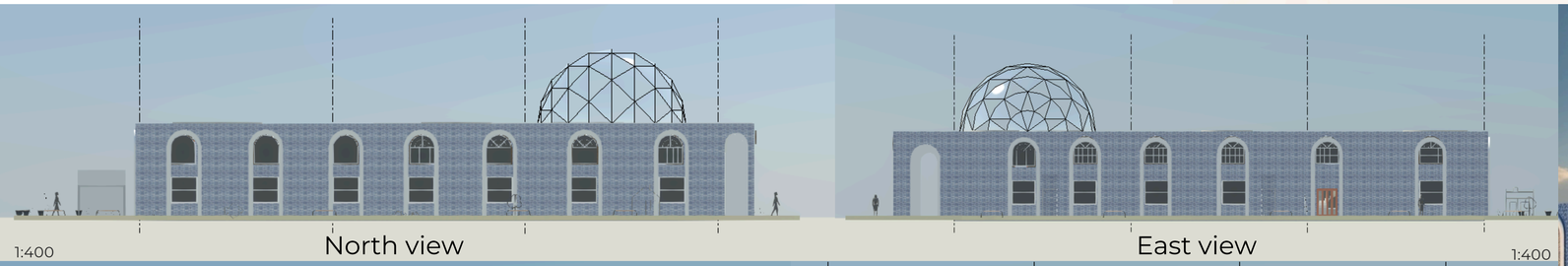



Intersection BB - Scale 1:200







North view

1:400



East view

1:400

South view

1:400



West view

1:400