

Vision & Current situation

Vision

Since the start of the civil war in Syria, the situation has worsened more than ever. People are crying out for peace and a roof above their heads. Through housing, education, and providing a place for their religion, we aim to help these people feel safe and find joy in their lives again.



The war in Syria is going with ups and downs. The first uprising of the civilians started in 1979. After this it remains a troubled situation.



The total of **people in need** in Syria amounts around 15,3 million of which 4,1 million people in the northwest of the country.



1,68 million of the population of Syria is below the age of 18 years old. Of this group only 800.000 children are following lessons in **school**.

Facilities



Electricity
Electricity is available in the environment.



Cold water
Cold water is available, but hot water is not.



Sewerage
The sewer system is drained at a certain times.



Diesel heating
The diesel heating is used in the classrooms. If necessary, we can also apply it in the mosque.

Population & culture

Population density

the population density in the region around Aleppo is between 337 and 648 people per square mile

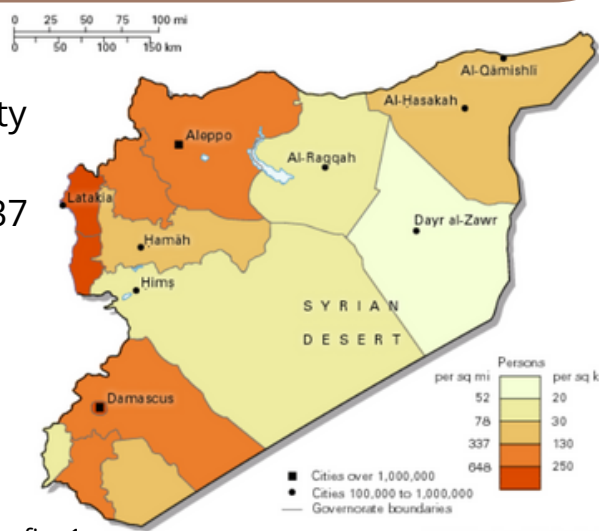


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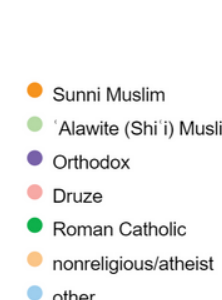


fig.2

Religion

Sunni Muslim is the most common in Syria with 74%. Second place is Alawite with 11% of the population

Urban or Rural?

About 42% of the population in Syria lives in a rural area, which means they live on the countryside. About 58% lives in a town or city.

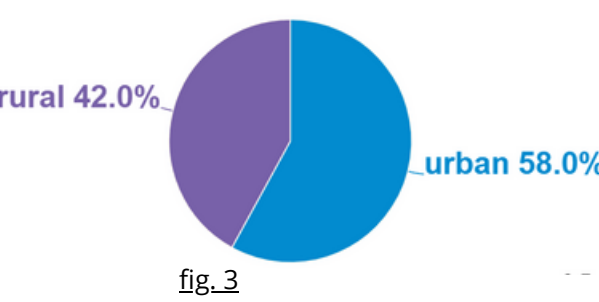


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Syria age breakdown

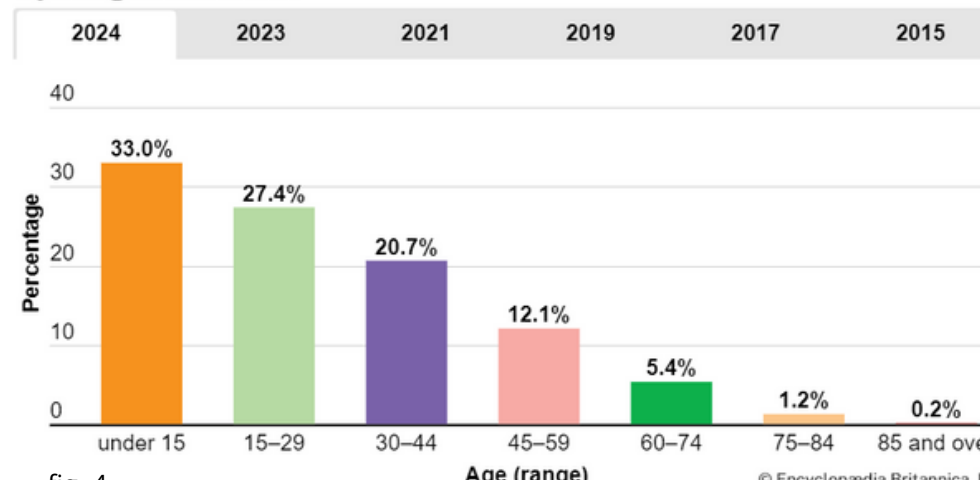


fig.4

Location



Average warm temperatures

10°C - 35°C



Average cold temperatures

2°C - 21°C



Precipitation in mm

400 mm



Climate

Mediterranean: wet and mild in winter and warm in summer



Landscape

Agricultural land

Soil condition

Number 48 is the area in which we operate. The green soil means that it is a good soil for agriculture. This is great, because we want to use greenery from the area for the design.

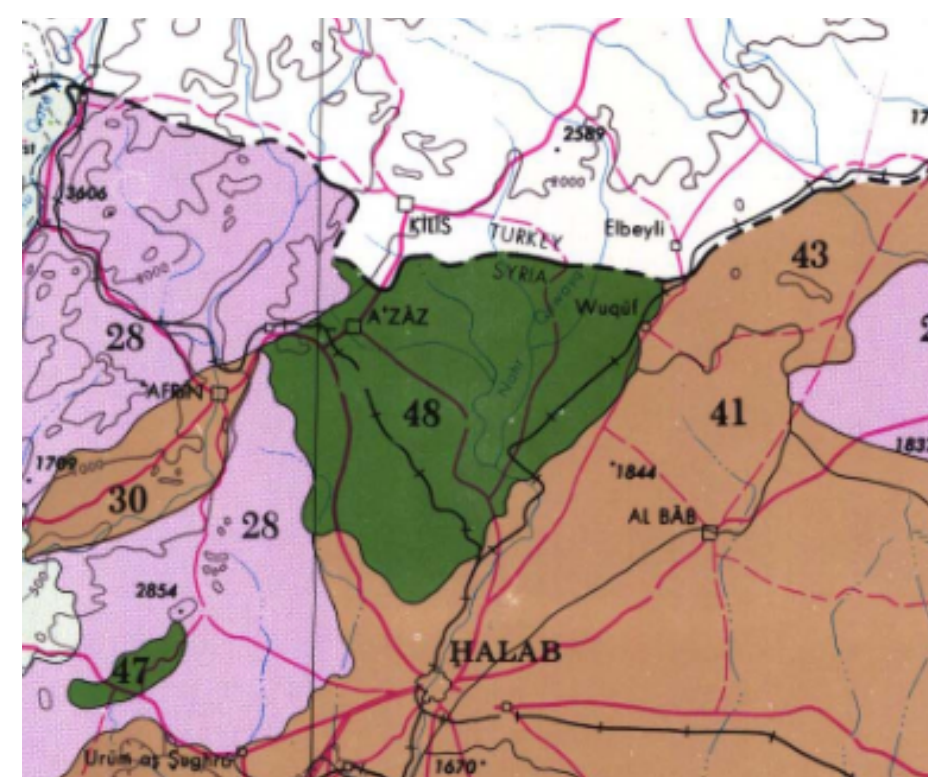


fig.5

Build aspects

Transport

Those materials need to find their way to our construction site. This will be done by truck via the highway. Our materials are all sourced from factories within the region, with a maximum travel distance of 3 hours.

The **concrete** will come from a factory on the outskirts of the city Aziz. It is a drive from 3.7 kilometer what is about an eleven minute drive from the factory to our construction site.

The **steel** that we are using is coming from the alshehabie steel factory on the outskirts of the city of Aleppo. The steel will come by truck and is about an one hour and a half drive to our construction site.

The **cellular concrete bricks** for the interior and exterior walls will come from a fabric which specializes in concrete at the outskirts of the city Hama. This route to our construction site is a drive of 200 kilometers by highway, what is about a 3 hours drive.

Concrete recycling

In our project in Syria, we are transforming rubble into reusable concrete for our school-mosque. We collect the concrete debris from damaged buildings and process it using specialized equipment. By crushing and refining the rubble, we produce high-quality concrete that meets construction standards. This sustainable approach not only helps clear the remnants of destruction but also provides essential building materials for our educational and religious facility, fostering a sense of renewal and hope in the community.

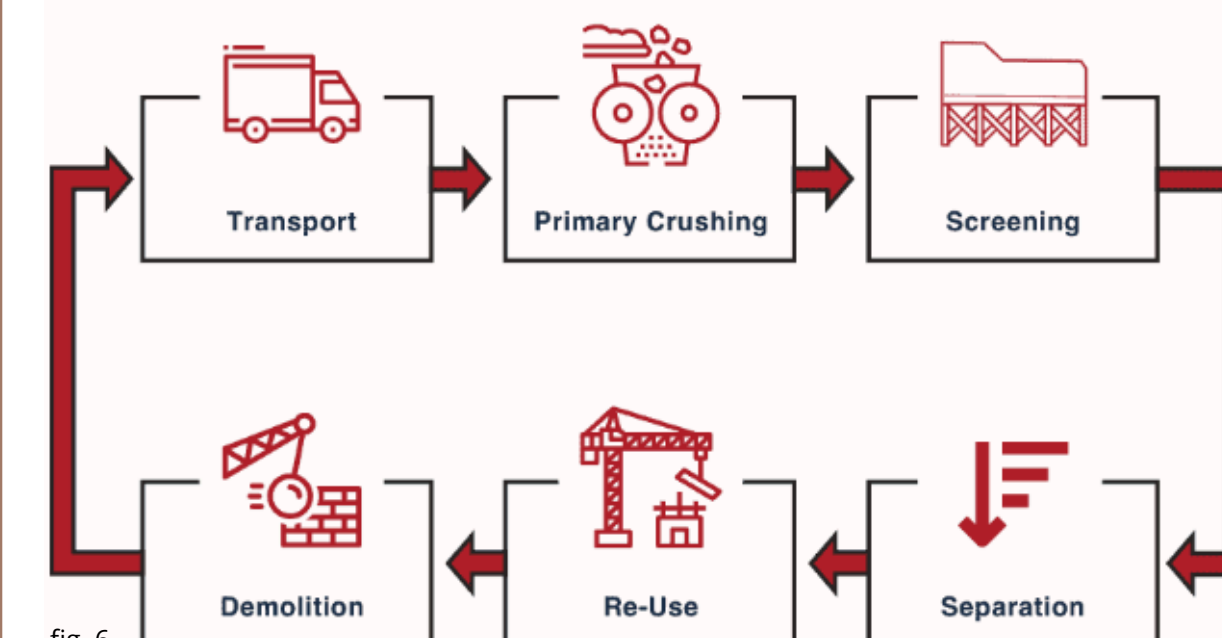


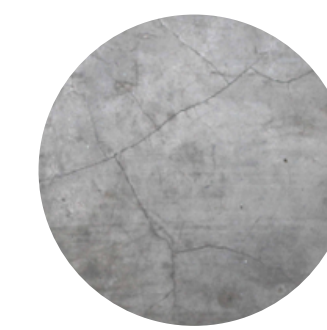
fig.6

Material use

In Syria they only build with the materials that are available in the area. The whole construction of a building in Syria consists of concrete and steel. The structure of columns consists of poured concrete with a lot of steel in it which helps against earthquakes.

For the interior and exterior walls we are using cellular concrete. Those blocks are light of weight and easy to place by hand.

Concrete



Steel



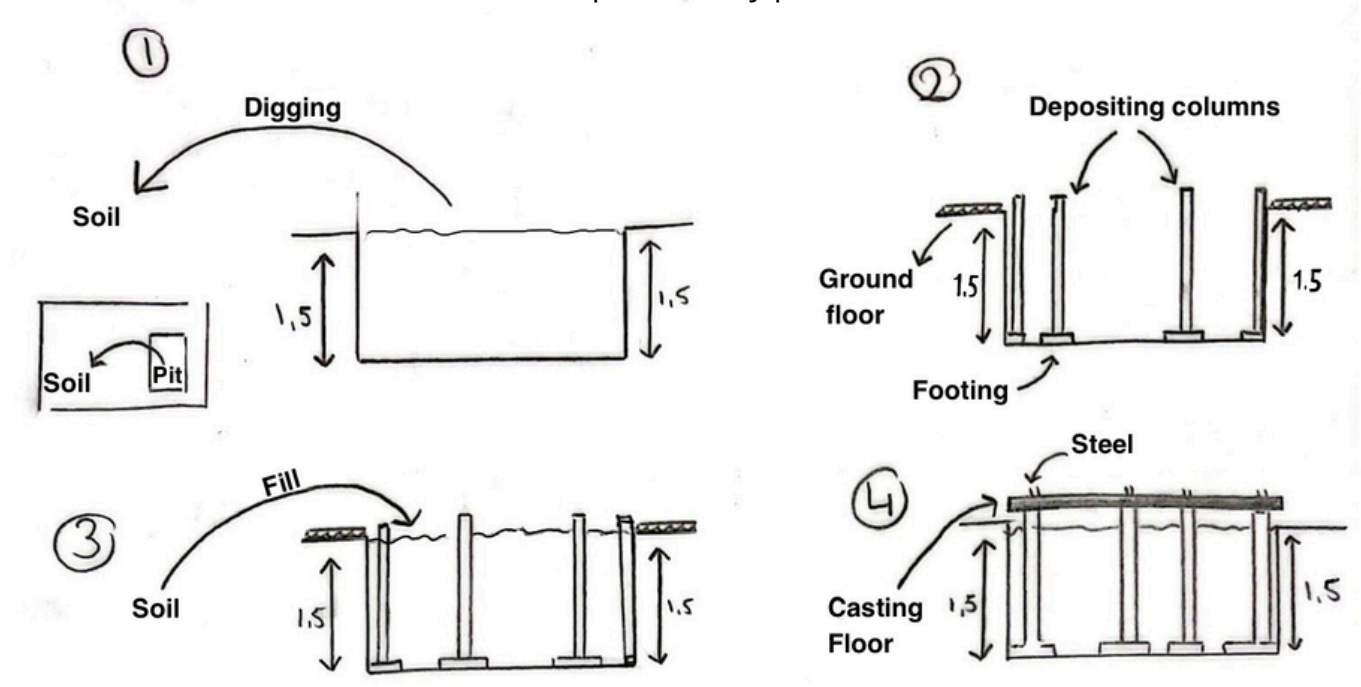
Cellular Concrete



The **base construction** of the building fully consists of concrete with steel for extra strength.

The build of the foundation goes with a few steps.

1. first they dig out the ground till about 1,5 metres under the ground. The excavated soil is moved to a further area a couple meters from the site.
2. After the soil is removed they use concrete footing as the base of the poured columns that are placed on top of this.
3. The soil is placed back as it was before.
4. on top of the columns they place a concrete beam on top of it.
5. At the end of the construction process they pour a floor on the concrete beam.

Engineer aspects
building technology

construction method.

Working with concrete is a widely used construction method in Syria. This design uses a combination of wide slab floors, aerated concrete and concrete columns to stabilize the building.

Earthquake Hazard

Northern Syria is prone to seismic activity because it is located near the boundary of the Arabian and Eurasian tectonic plates. The East Anatolian fault line, located near the Syrian border, is a major source of earthquakes. The region has a history of seismic events, highlighting the importance of buildings being designed to withstand such forces.

Earthquake Resistance

Base isolation is a technique that can be applied to help prevent motion created by earthquakes underground. It does this by separating the structure so that the forces do not have an effect on the building. The only downside is that this is quite an expensive construction method.

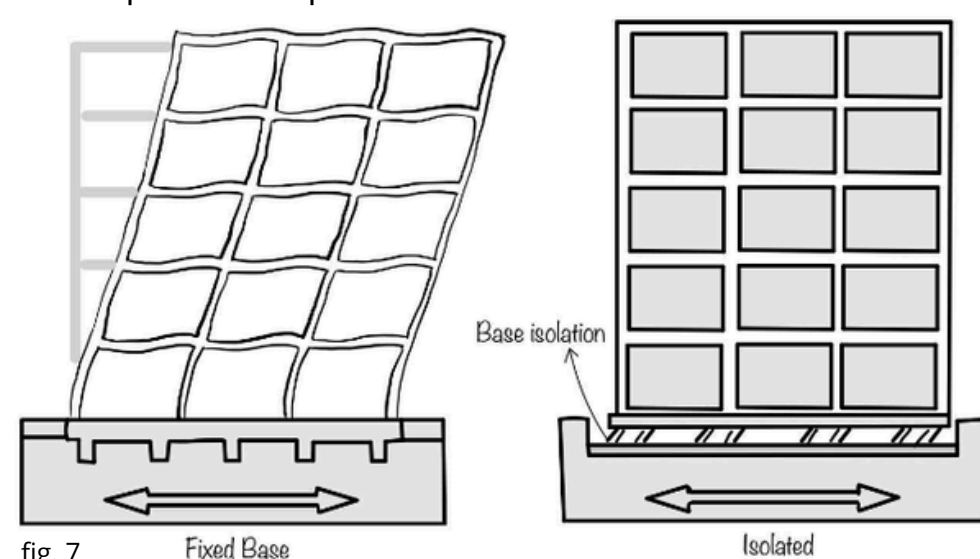
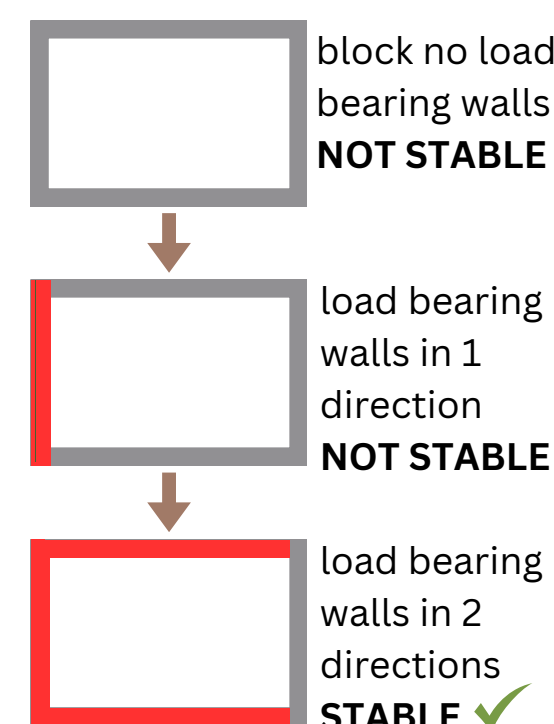


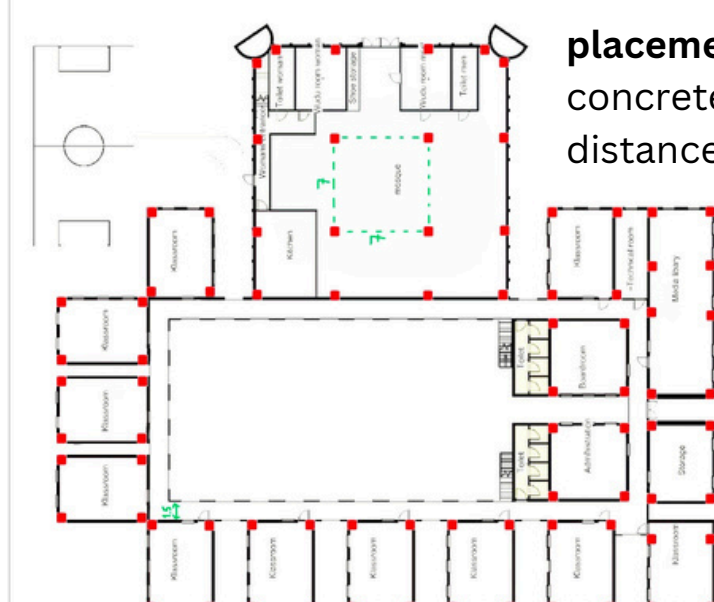
fig.7

stability

It was a requirement that similar **block shapes** equal in height and width be used. This makes for an easier earthquake-resistant construction and it's better for the lack of skilled workers. The blocks make for an easy stabilization method with the use of aerated concrete walls (load bearing).



placement columns
concrete columns maximum distance of 7 meters.

Engineer aspects
building physics

green roof against overheating

- simple design
- soil from nearby
- against overheating
- reflection of sun

rainwater collection

- resembles the principles of sewage.
- collection in a tank
- distribution on roofs through pipes.
- 2 way system.



fig.9

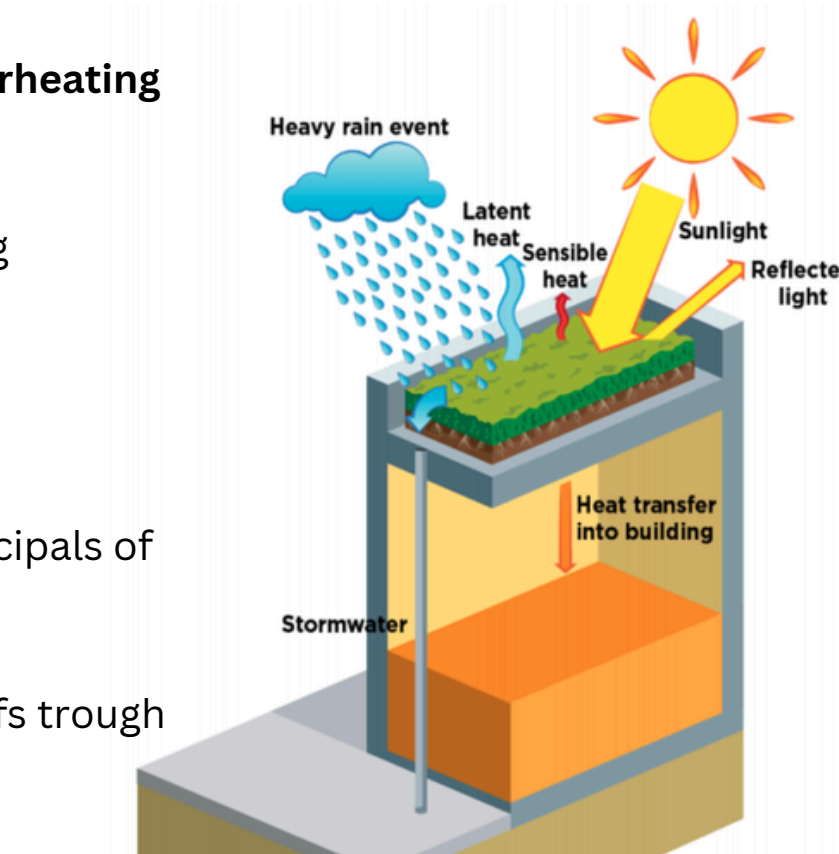


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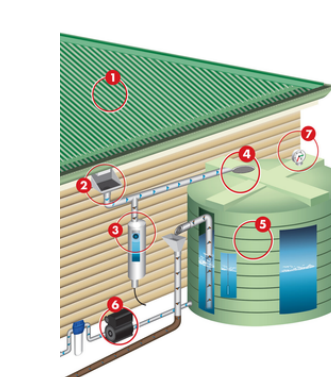


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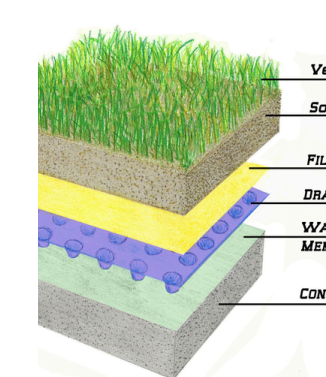
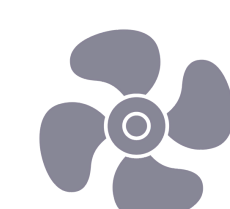
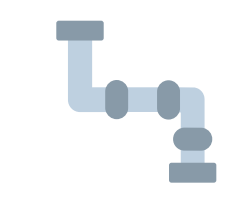


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Engineer aspects
building physics

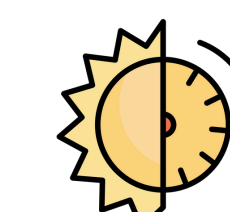
ventilation

The design promotes free air flow throughout the school and mosque that's why ventilation system A is a good option to keep the technical installations to a minimum. There are enough windows in a classroom to keep good airflow with the use of a heating system on diesel. The airflow is extremely important for the safety of the students.



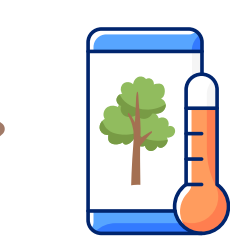
pipelines

With the facilities already available the design will focus on making sure the pipelines are in an enclosed space together to keep the design and piping system simple because there is a shortage on craftsmen.



daylight

It is of importance that everyone has some form of daylight in every enclosed space especially in classrooms. Students write with their right hand so it is important that they get sunlight from a left window so that they won't write into their own shadow. The use of light colors for the outside and inside of the classroom promotes reflection into the closely placed learning space.



overheating

To prevent overheating and to promote a comfortable climate for our students there are big cloths from potential old tent materials that can be used above the courtyard for especially hot summer days. A green roof is used for above classrooms to keep the heat on the surface area to a minimum.



fig.12



fig.13

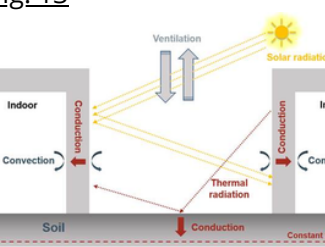


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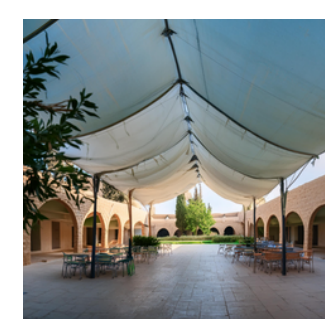


fig.15

Research
Design

What is typical of the (northern) Syrian architecture?

- Central courtyards
- Use of domes
- Use of elegant arches
- Beauty from the inside and beauty from the outside hidden for safety
- Intricate tiling and patterns
- Plants for cooling and humidifying indoor climate



What is typical of the Islamic architecture?

- Geometric designs
- Pointed arches, domes, minarets and muqarnas vaults
- Striking shapes and decorative details
- Combination of Roman, Byzantine and Persian architecture
- Multicolored mosaic tiles, Arabic texts and wooden grilles on windows
- Outdoor facilities have walled courtyards
- Open halls with a roof supported by columns



What is typical of the Islamic architecture?

- Islamic use of color gives spaces cultural depth and profound meaning
- Green symbolizes life, nature and paradise
- Blue symbolizes spirituality, heaven and transcendence
 - Often used in tiling, domes and ceiling constructions
- Gold symbolizes splendor, purity, status and wealth
- White symbolizes purity, peace, cleanliness, simplicity and modesty
- Black represents solemnity, authority, mourning and holiness



Usage habits of a mosque

- Collective prayer space
- Men and women separated
- Social and cultural epicenter
- Meeting place
- Classroom
- Multifunctional space
- Domes, referring to God, who created heaven and earth.

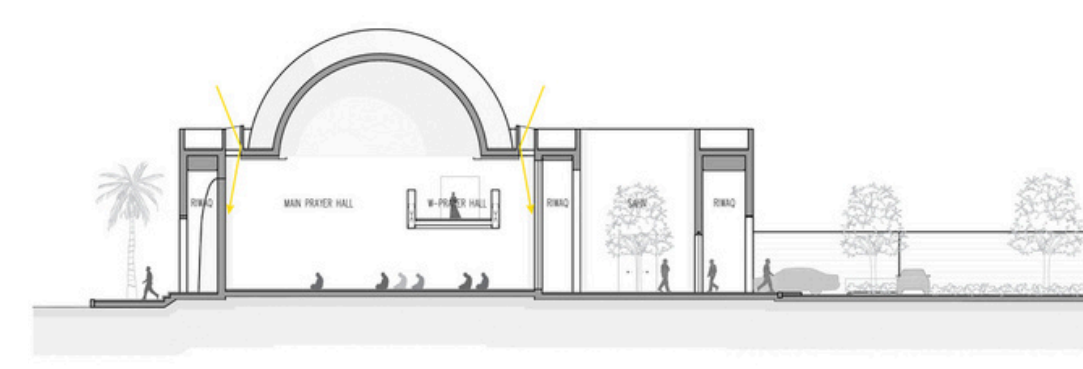


fig. 31

Usage habits of a mosque

The Madrasa once originated as a Quran school within the Islam. Today, this educational institution has a broader curriculum, teaching methods, and ideologies. The Syrian Madrasa features a rectangular design with arcades around the open courtyard. The hall faces south for prayer.



fig. 31



fig. 32

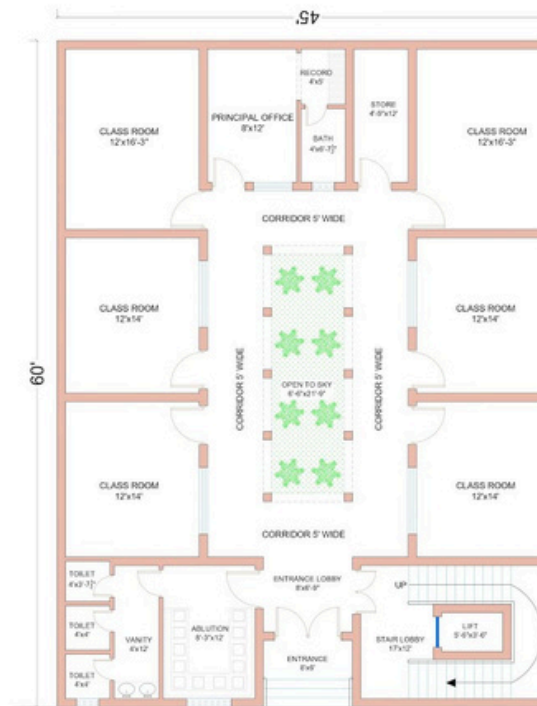


fig. 33

School system Syria:

Primary and secondary education in Syria:

In Syria, primary school and junior high school are called the basic stage. The basic phase is for children aged 6-15. In Syria it is mandatory to follow the basic phase. This basic phase is completed with a national exam to obtain the Basic Education Certificate diploma. In the basic phase, the children are taught: Arabic, a foreign language, mathematics and religion.

- Once the diploma has been obtained, the children have two options: General Secondary Education. As the name suggests, this is a general direction, here you will learn all kinds of things. General Secondary Education can be compared to HAVO level. The 2nd option is Vocational Secondary Education. This is a vocational school. This can be compared to MBO level 2-3. Both choices are concluded with exams and last 3 years.

Form Primary schools Syria:

Unfortunately, there is not much information available about how primary schools in Syria are structured. Madrasas are schools where religious lessons are taught. In the layout of a madrasa, the classrooms are arranged around a courtyard. I found 2 examples of schools built in refugee camps for Syrian children. What is striking about both of these schools is that the classrooms are built around a courtyard, just like a madrasa. The schools are designed in such a way that Syrian children can get a feeling of home. Building around a courtyard is common in Syrian architecture. The courtyard is common in buildings for the wealthier people. The purpose of a courtyard in Syrian architecture is to create a sense of privacy and community.



fig. 34

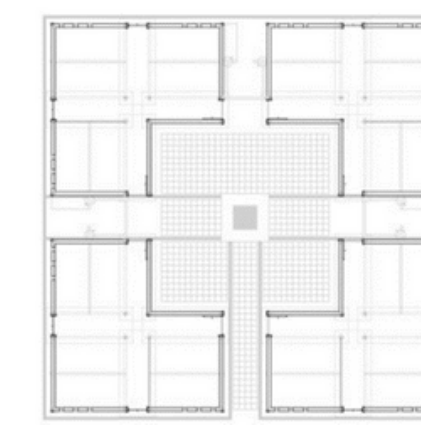


fig. 35

Schedule of requirements
qualitatively

Quantitative

Design requirements

Classrooms

- Number of classrooms: 22, capacity 30 students
- Surface area: minimum of 35 m2

Teacher's room

- Men
 - Surface area: minimum of 45 m2
 - Including kitchen
- Women
 - Surface area: minimum of 45 m2
 - Including kitchen

Toilet

- Men - minimum surface area: 15 m2
- Women - minimum surface area: 15 m2
- Boys - minimum surface area: 15 m2
- Girls - minimum surface area: 15 m2

Qualitative

Technical requirements:

Installation

- Ventilation system A
- Rainwater harvesting system

Building Physics

- Prevent overheating through the use of a green roof and color schemes.
- Daylight entry into the mosque through openings.
- Windows on the left side of each classroom for shading purposes.

Construction

- Earthquake-resistant foundation
- Load-bearing walls made of cellular concrete for stability.
- Column support structure with a center-to-center distance of 7 meters.
- Precast concrete floors.
- Prevent torsion by using closed corners.

Administration room

- Minimum area: 35 m2

Boardroom

- Minimum area: 35 m2

Media library

- Minimum area: 70 m2

Laboratory

- Minimum area: 70 m2

Technical room

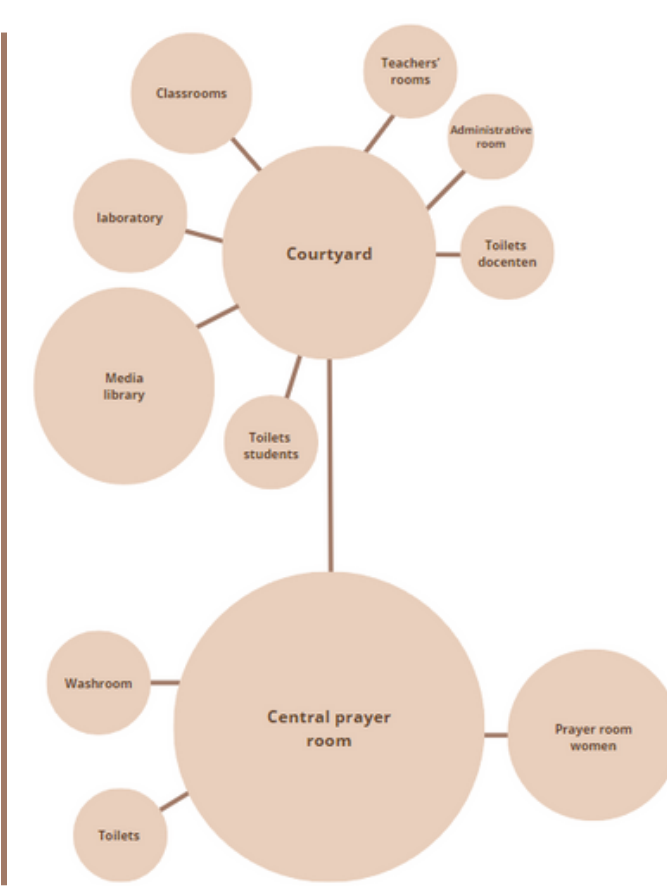
- Minimum area: 15 m2

Storage

- Minimum area: 30 m2

Mosque

- General prayer room
 - Men - minimum surface: 270 m2
 - Prayer room women
 - Men - minimum surface: 90 m2
- Toilet
 - Men - minimum surface: 10 m2
 - Women - minimum surface: 10 m2
- Wudu area
 - Men - minimum surface: 20 m2
 - Women - minimum surface: 20 m2
- Kitchen
 - Men - minimum surface: 30 m2

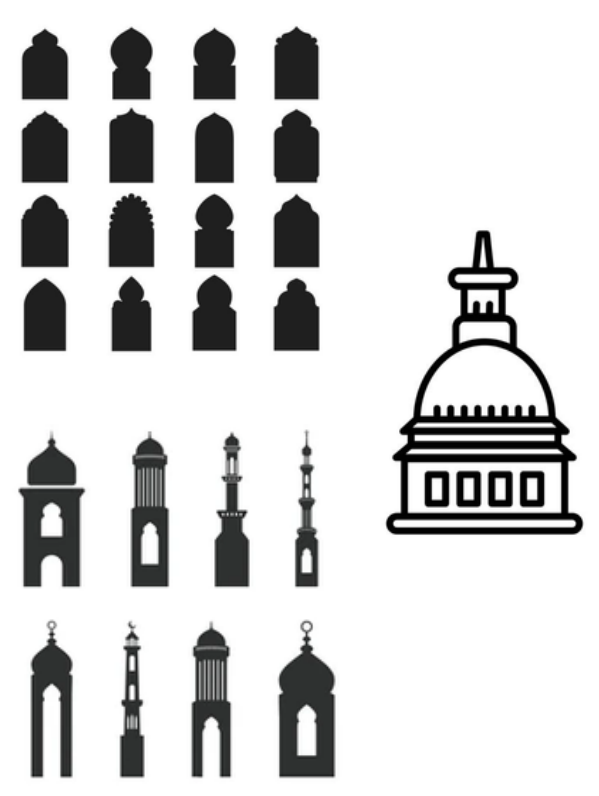


Implementation requirements:

- Easy to build with minimal special shapes due to a lack of specialized knowledge.
- Construction method using available materials: concrete and steel.
- Foundation on columns.
- Application of a hard construction road.
- Circular use of local rubble for making concrete.

Design requirements

- Use of domes
- Making use of minaret(s)
- Using pointed arches
- Using symbolic color(s)
- Attach social function to mosque
- Safe courtyard for the children

Design option 1
Noah

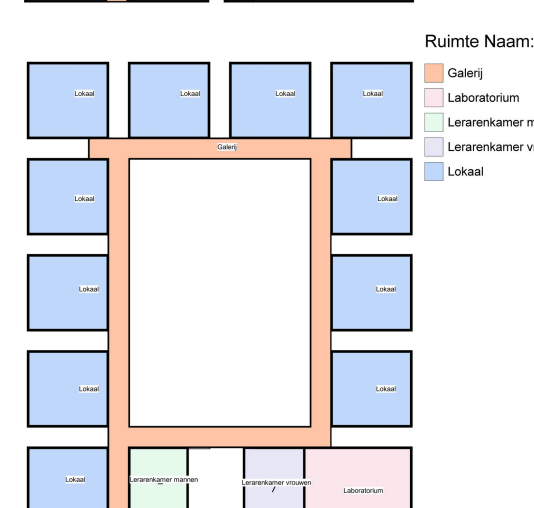
Sketch design

Lycee Charles de Gaulle is a French school built in Damascus, Syria. Because it gets extremely hot in Syria during the summer months, this school is designed to cool the building through the surrounding vegetation. All the classrooms are separate blocks with vegetation around them, so the warm wind is cooled before reaching the building. Any warm air that does enter the building is expelled through a "thermal chimney," which is designed to vent almost exclusively warm air.

Lycee Charles de Gaulle is built on a much larger site. Therefore, I placed all the classrooms closer together. Additionally, I arranged all the classrooms around a courtyard to create privacy.



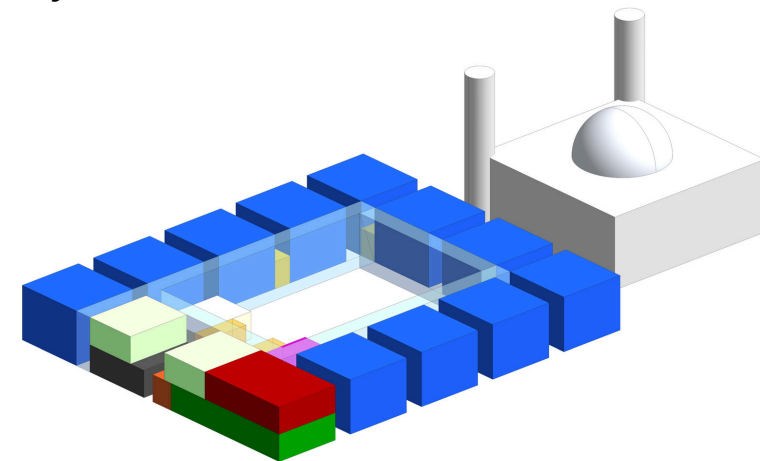
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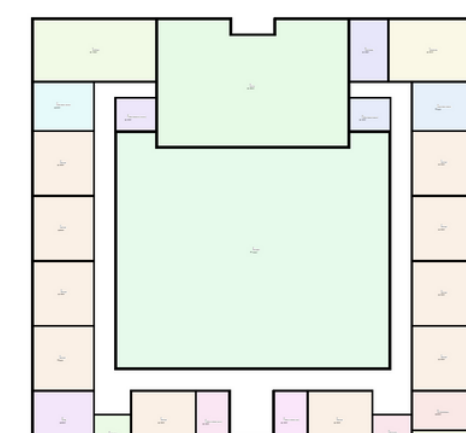


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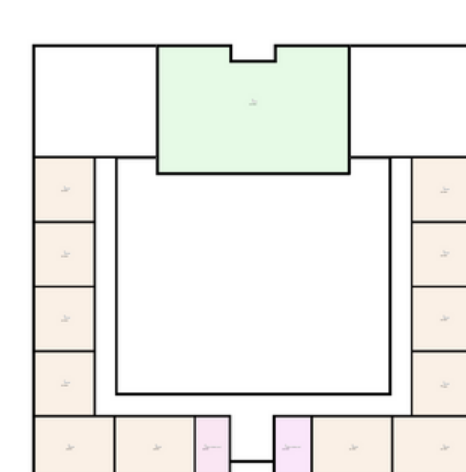
Design option 2
Verena

Sketch design

My sketch design is based on two reference designs; Al-Mustansiriya Madrasa in Baghdad, Iraq and Mir-i Arab Madrasa in Bukhara, Uzbekistan. The buildings are decorated with pointed arches and geometric ornaments. The references are characteristic of the square courtyard surrounded by two floors of cells and two large domed halls in the left and right corners. The decor of the building consists of various stone mosaics with geometric, vegetative and calligraphic writings and patterns. These are all aspects that I have reflected in my design. Furthermore, I made optimal use of the plot area. The most important aspect of my design is the safety of the children. I went for the more traditional look of a madrasa.



Begane grond



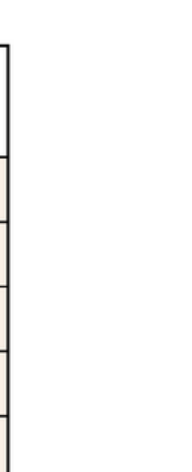
Eerste verdieping



fig. 37



Begane grond

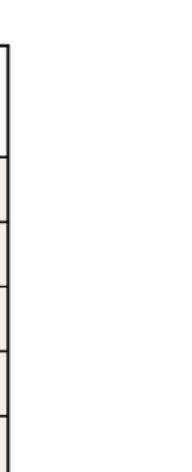


Eerste verdieping

Room Legend



Begane grond



Eerste verdieping

Design option 3
Noor

Sketch design

My sketch design is based on the reference "Mamluki Lancer" mosque. It is a fusion of the traditional past and the modern present, with a timeless feel. At the front of the mosque is a large wooden door. A tall door symbolizes the greatness and majesty of Allah. Entering a mosque is seen as a step to a higher, more spiritual state of being.

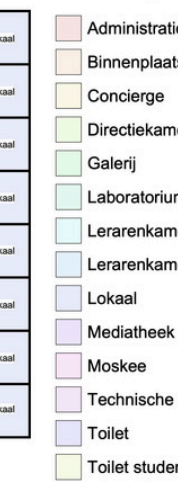
I will incorporate the peace and unity in this design into my mass proposal. In this I will combine traditional features with a modern look. This will tie in with the existing Venix neighborhood. I will base the floor plan on the analyses done beforehand. Looking at the characteristics of a Madrasa.



fig. 38



Room Legend



Room Legend

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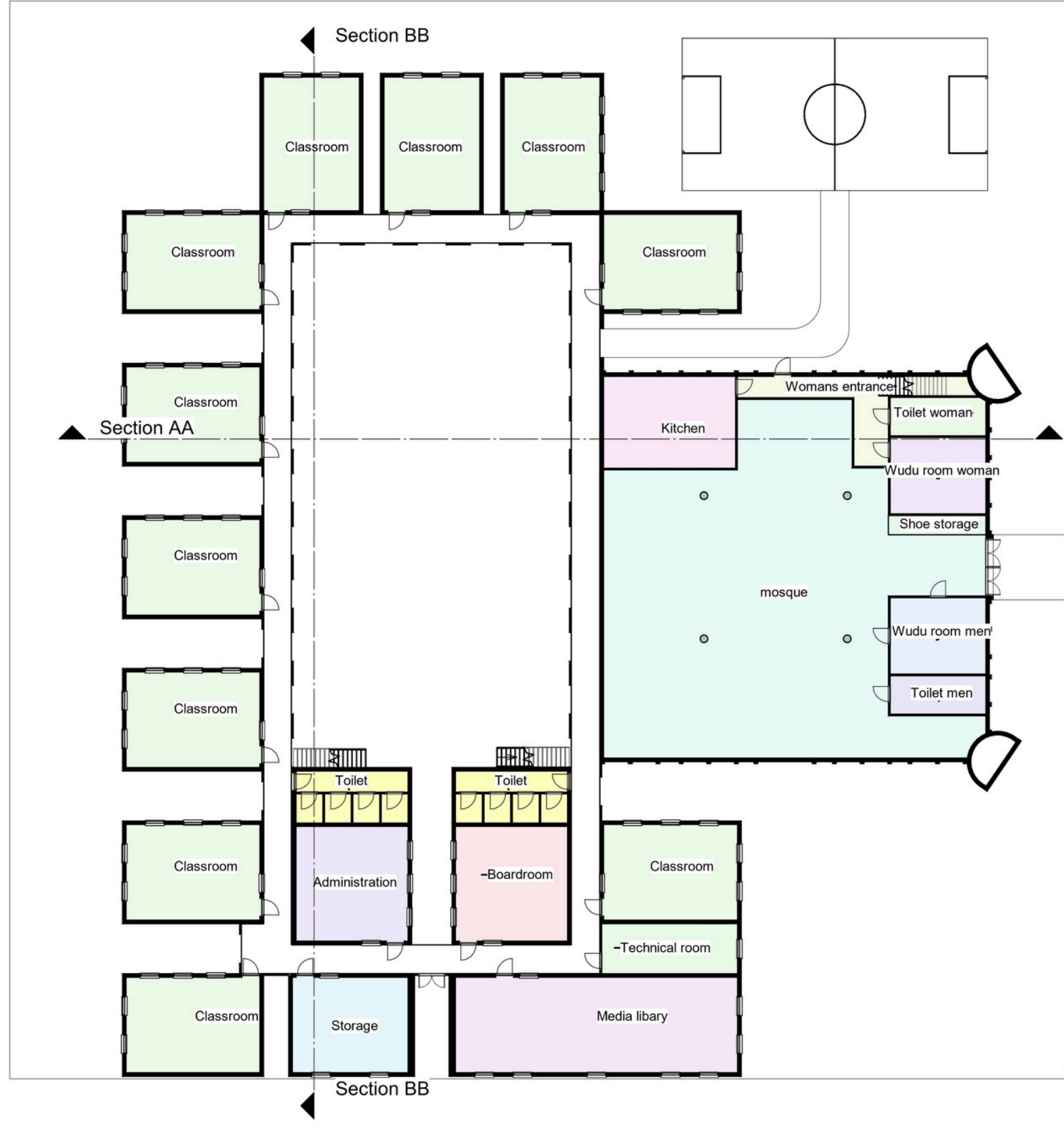


Motivation design

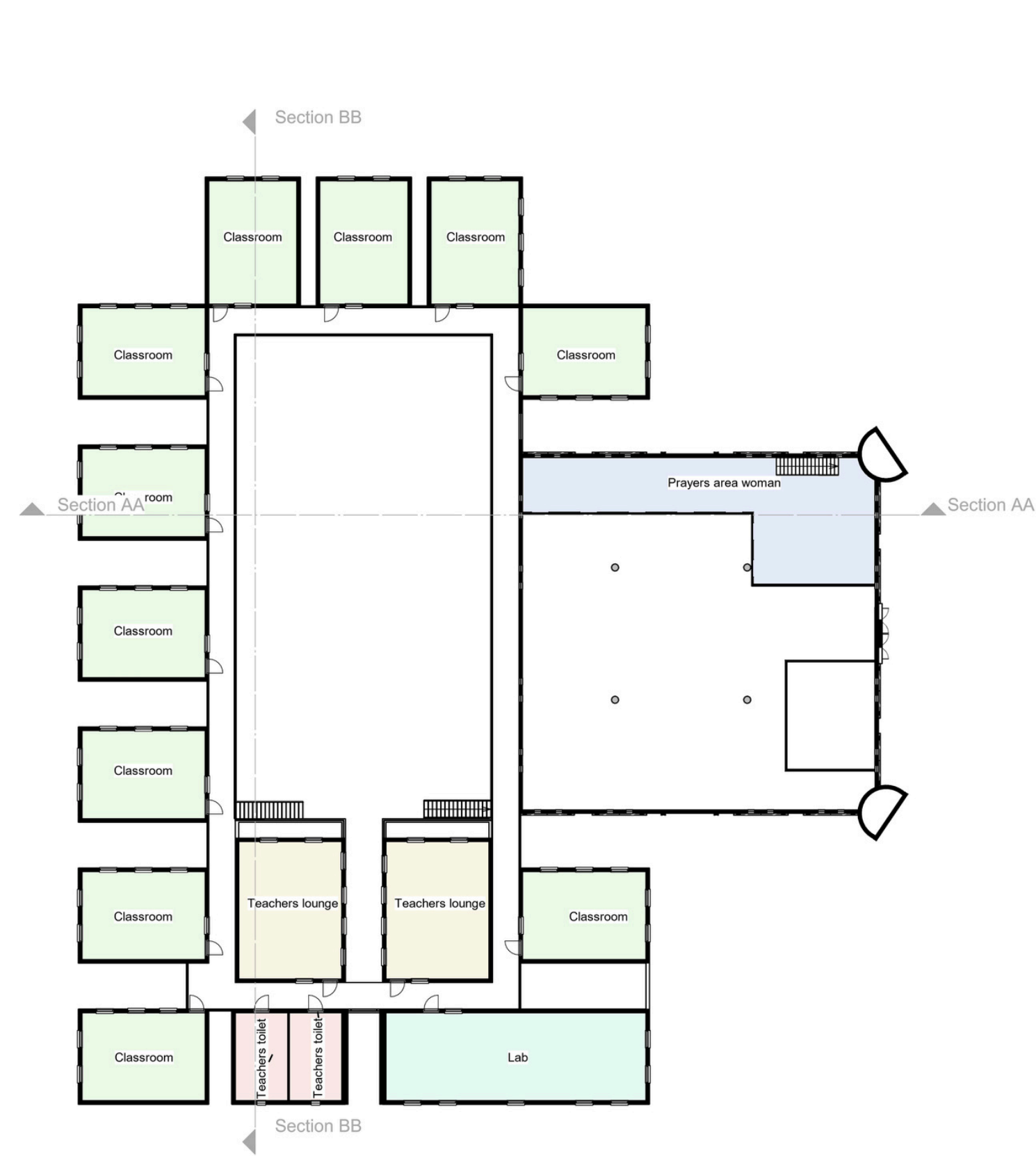
This became the final design for the madrasa in Syria. Noah's sketch design has been further developed into a more detailed design with aspects of the designs of Noor and Verena. For example, the use of creating a more enclosed courtyard is something that was prominent in Verena's design. The use of graceful shapes and a stately door is something that comes from Noor's sketch design. The ultimate idea is to create a safe courtyard for children and students that can be cooled by the use of greenery in the hot summers. The classrooms are also cooled naturally through the use of a green roof. Outside the courtyard next to the school, a football field has been placed where the children can play together. We have also taken the typical Syrian architecture into account in the use of color and materials for the madrasa. It is normal that the beauty of a madrasa is only visible from the courtyard. Furthermore, simple colors are also used extensively. For the dome of the mosque we kept the colors of Islam in mind. For this we have chosen the green color which stands for life, nature and paradise.

The use of greenery and the safety of the children is the most important aspect of the final design. Together with the engineering, build and design team, we looked at all options that were possible for the design. Ultimately, through much consultation and coordination, we created a complete and comprehensive proposal.

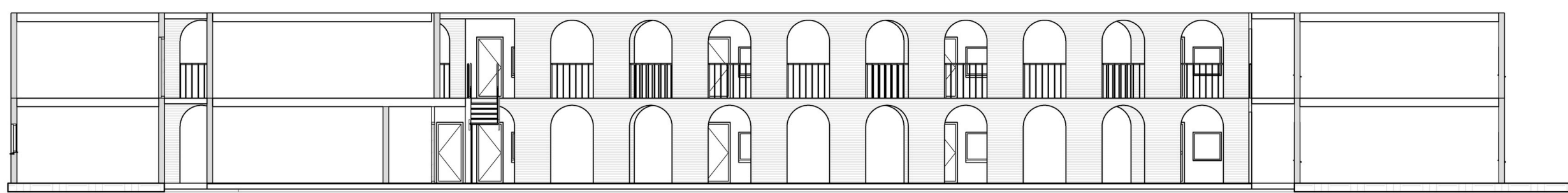
Ground floor



First floor



Section AA



Section BB