

**COGITO**

Explanatory note

## **Concept of the design**

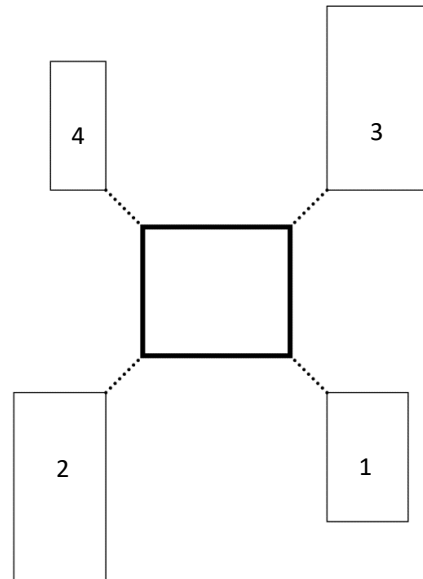
The Future European School is committed to ensuring a smooth transition from an industrial economy to a knowledge economy, where the concept of human sustainability is essential for success. Human sustainability emphasizes values over imagined stories of success, respect over competition, and knowledge over power. The School stands as a crucial part of this larger framework, being adaptable to specific needs and geographies while steadfast in its values and predictable in Future.

The proposal intends to create a framework of design guidelines based on modularity of all levels. Module as an individual entity (be it volume, structural or visual element) regardless of its geometric and visual appearance fulfils the function on its own. The proposal lays out rules for connecting and arranging these modules in ways that prioritise flexibility and aesthetic values, therefore allowing high level of adaptation and customisation.

The proposal does not present a specific building or a specific visual solution – it strives to create a structured design language that makes up a building, and the resulting architecture is interpretation of the one who speaks the language.

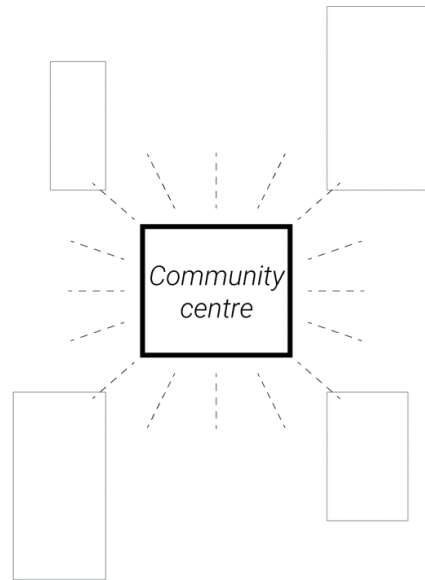
## Architectural idea

Adaptation possibilities



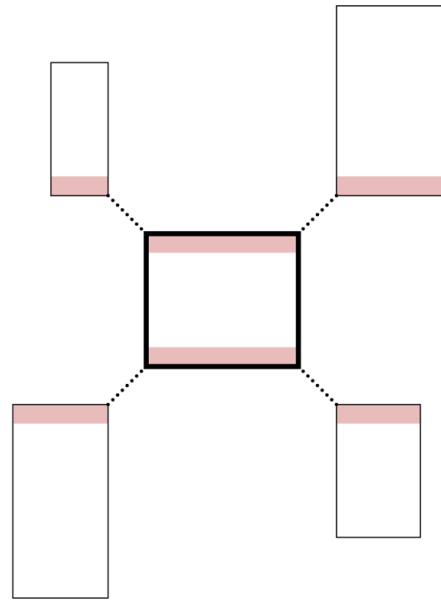
Adaptability concept is based on a module system where each volume (separated as **(1)** elementary school, **(2)** primary and secondary school, **(3)** sports block and **(4)** dormitory) is physically and programmatically self-sufficient entity connected through the central volume consisting of major public spaces - **Core**.

Connections are established in a way where access to each of the modules can be limited at any given time, enabling flexible use of facilities for public purposes and different event scenarios.

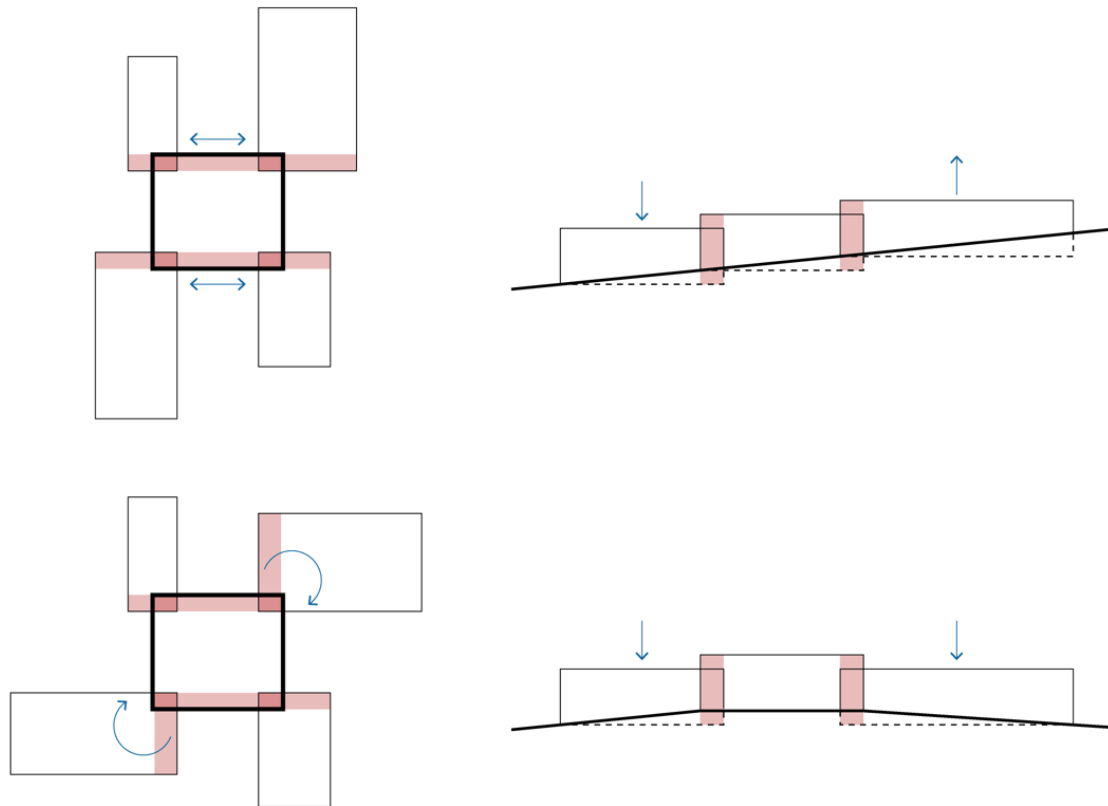


**Core** itself contains all the functions that may be deemed necessary for public use, thus going further than simply providing separate access to community premises and rather becoming a community centre as a whole.

Public library, event hall, medical rehabilitation centre, soup kitchen and designated community premises offer a great possibility to extend building's usage beyond school needs.

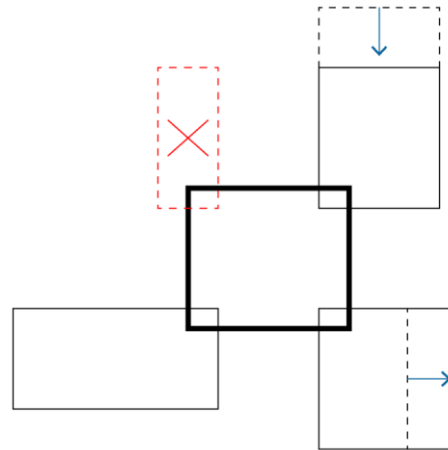


Each module has its main stairwell zone which is met by a linear connection zone on Core volume's ends, providing shared, flexible connection hubs (both horizontal and vertical) between modules.



Such a configuration allows each module to be connected in various ways, taking into account plot limitations and topography. Modules can slide along connection zones creating variable overall volume widths and interior courtyard spaces. Depending on plot configuration and sun orientation, volumes can also be rotated according to specific needs of room programme inside of them.

Coincident communication zones and scattered volume composition allow adjusting volume to terrain, introducing staircases, elevators and ramps (for overcoming slight height differences) in the span of linear communication zones.

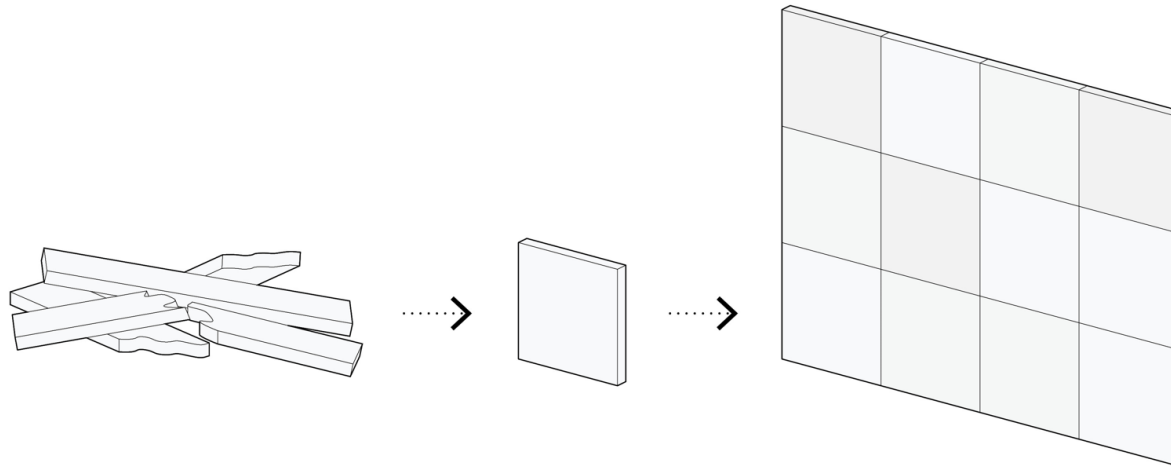


Established ruleset of modularity principles as well as design language that arises from those rules, provide complete programmatical freedom where volume responds to functional changes while retaining the same compositional and design principles.

Should the programme, for example, require more classrooms, less sports facilities or no dormitory block at all, such changes can be easily introduced into provided modular system.

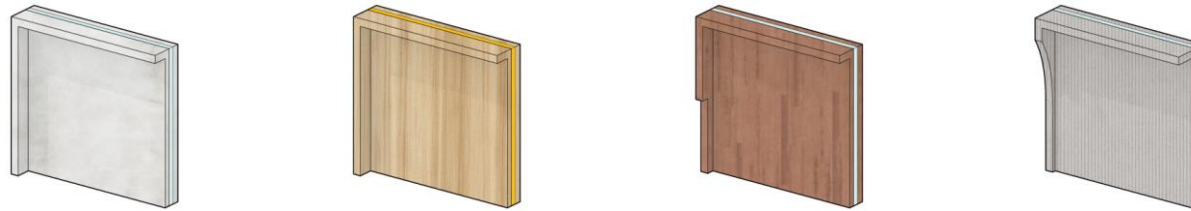
Above all, the proposal seeks balance of the scale of the building and economical/sustainability related feasibility. Splitting volume into functional modules not only responds to adaptability needs, but also reduces the scale of the building. It is a relative compromise regarding façade skin to floor area ratio, but spatial values created by doing so (reduced scale and interactive spaces between building parts) outweigh insignificant energy efficiency losses by increasing façade area.

## Adaptability of the architectural proposal and idea



Concept of modularity is further expanded into building's structure - both interior and exterior. The proposal is based on pre-fabricated concrete panels (structural interior panels, structural insulated facade panels and hollow slab panels) - a solution which in current situation might be deemed the most feasible, taking into account production and assembly benefits, as well as costs and resource management associated with reduced labour involved in the process. Sustainability factor is also a major factor in choosing prefabricated concrete elements, considering vast amounts of concrete rubble available for recycling.

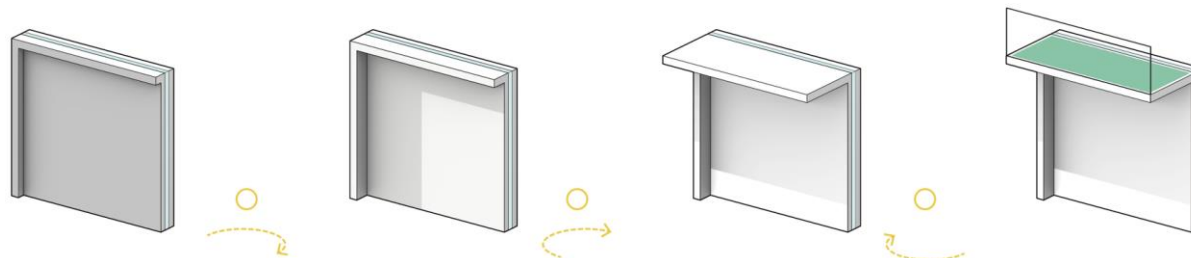




The structural solution of the panel is straightforward and feasible for execution in other materials as well. Structural spans have been foreseen with rational usage of any type of material in mind. Looking into future sustainability strategies, timber material can easily be adapted without modifying proposed design and structural principles.

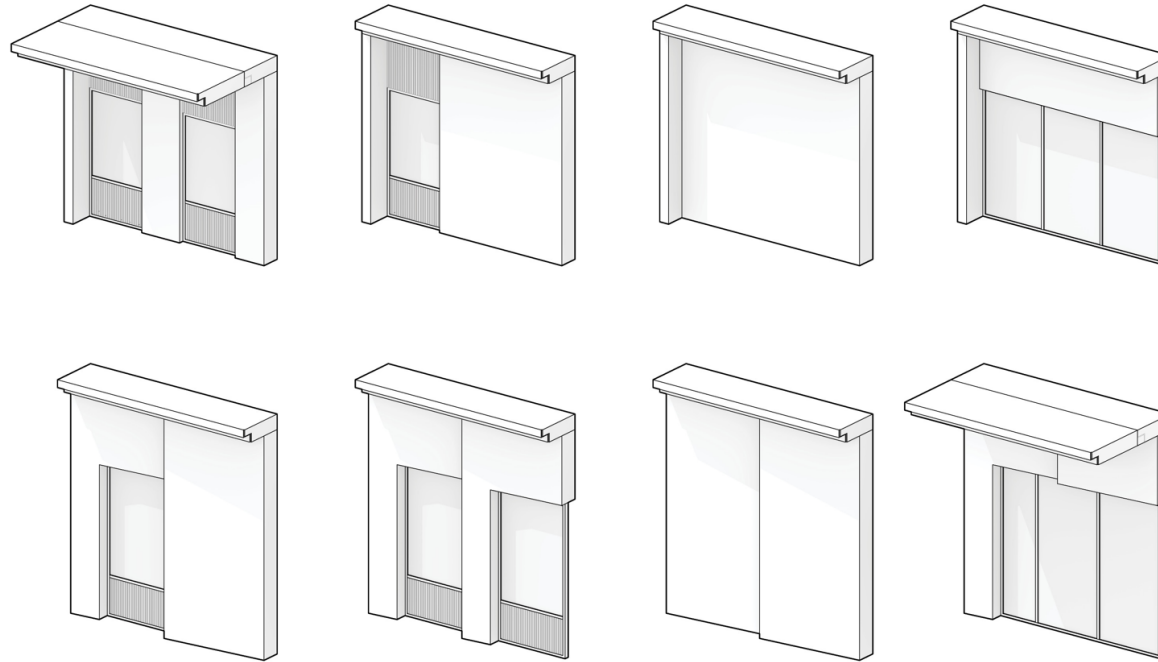
Currently, following the fire safety norms, different types of finish materials on top of concrete allow design adaptation for local cultural perception and climate related needs.

The proposal offers not a specific design solution, but rather strives to create a reasonable design language, following which, design iterations of concrete panel units can make the visual image of the building significantly different to previous adaptations, thus avoiding repetitive architecture in single area.



Geometric design variations of the module depend on sky orientation and functional zone. Northern part of the building consists of panels that have minimum extrusions. For east and west sides regular sized overhangs are designed to shade windows during midday hours. For southern side additional balcony type elements are foreseen to provide passive protection from the sun during the most intense solar energy season and hours, while also creating an option to have outdoor spaces for certain types of classrooms and cosy cantilevers for entrance zones and sheltered outdoor recreational spaces.

Abovementioned principles result in proposal specific design variant of the panels:



Facade base module is designed considering functional requirements of school premises - an optimum width of 4 m is foreseen with double window openings in this span allowing flexible plan layouts.

Regular classroom windows are designed according to Ukrainian norms requiring 800 mm high windowsills.

Further module design iterations are crafted with different details, glazed area proportions and distinctive articulation for certain zones or ground level.

## **Area layout for the main site and plan layout functional solutions**

Area layout cannot be viewed separately from plan layout, therefore, the following description takes on both simultaneously.

Plan layout emphasizes the main axis principle set in site plan – the front courtyard of the school is followed by the main entrance, which in turn is followed by public spaces that continue throughout the building and transform into public backyard which further opens up into activity zones. This strong connection emphasizes transparency and synergy between all users and acts as a backbone for the whole site. From functional point of view it is also convenient to organize school flows along a single axis – that allows sharing functionality of certain blocks natural and effortless.

As previously stated, all the main public functions are placed in the central volume. That serves both the needs of school organisational flow and gives the potential for this single volume to become a local community centre. The heart of the whole complex is the main atrium which acts as a gathering space and event hall - fusing all the surrounding spaces into a single unity.

To equalise access to central spaces and take advantage of the sky orientation, both school blocks are placed in southern part of the site, and also the very frontal part of approaching it. This part is also more suitable for activity spaces immediately next to school blocks – which include recreational, as well as gardening activities.

For elementary school children a strong connection from classrooms to outdoor spaces is created introducing outdoor activities into daily learning process. The architecture of the building is crafted in a way that offers sheltered spaces for such spaces.

Grade 1 block is placed on the second floor of elementary in order to assign the greatest feeling of security and privacy. Their dedicated outdoor space is placed on the adjacent roof terrace which also gives complete control of children whereabouts outdoors.

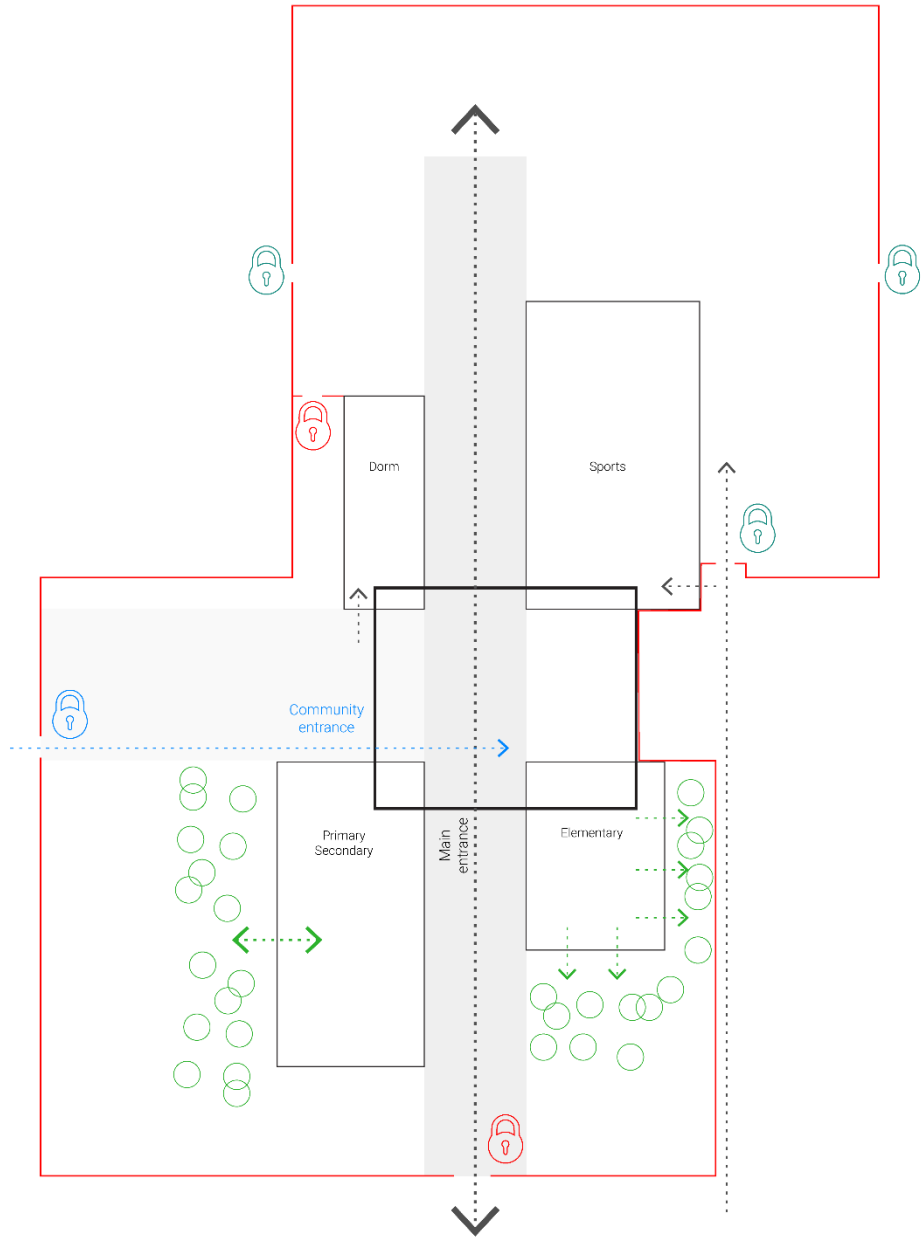
For primary and elementary pupils there are no direct connections to outdoors from classrooms since their learning process does not require frequent outdoor activity involvement, instead a major spatial connection between indoor recreational space and outdoor recreational space is created on ground level's atrium.

Community access is limited from the western part of the site. It is sensibly isolated from the children activity zones and also has a more serious, monumental character than other spaces. During school hours this area with acts as an outdoor gathering space for school events, as opposed to more scaled down, fragmented

garden-like landscape in the frontal part of the building. Proximity of parking lot to community entrance creates a visually non obstructive connection between the building and the vehicular zone.

Placing dormitory next to the community entrance area also gives the benefit of a more private and secluded access to facilities both during school hours and after school hours.

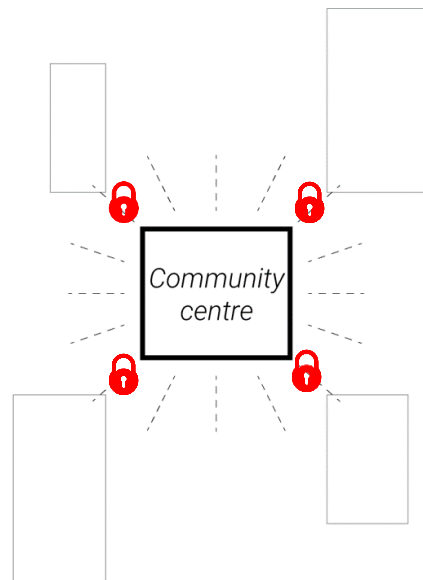
Back side of the site is devoted to sports activities. As previously described, the decision to place sports areas in the northern part of the site not only offers more valuable sky orientation to other spaces, but also gives better control of sports facilities' access during after school hours.



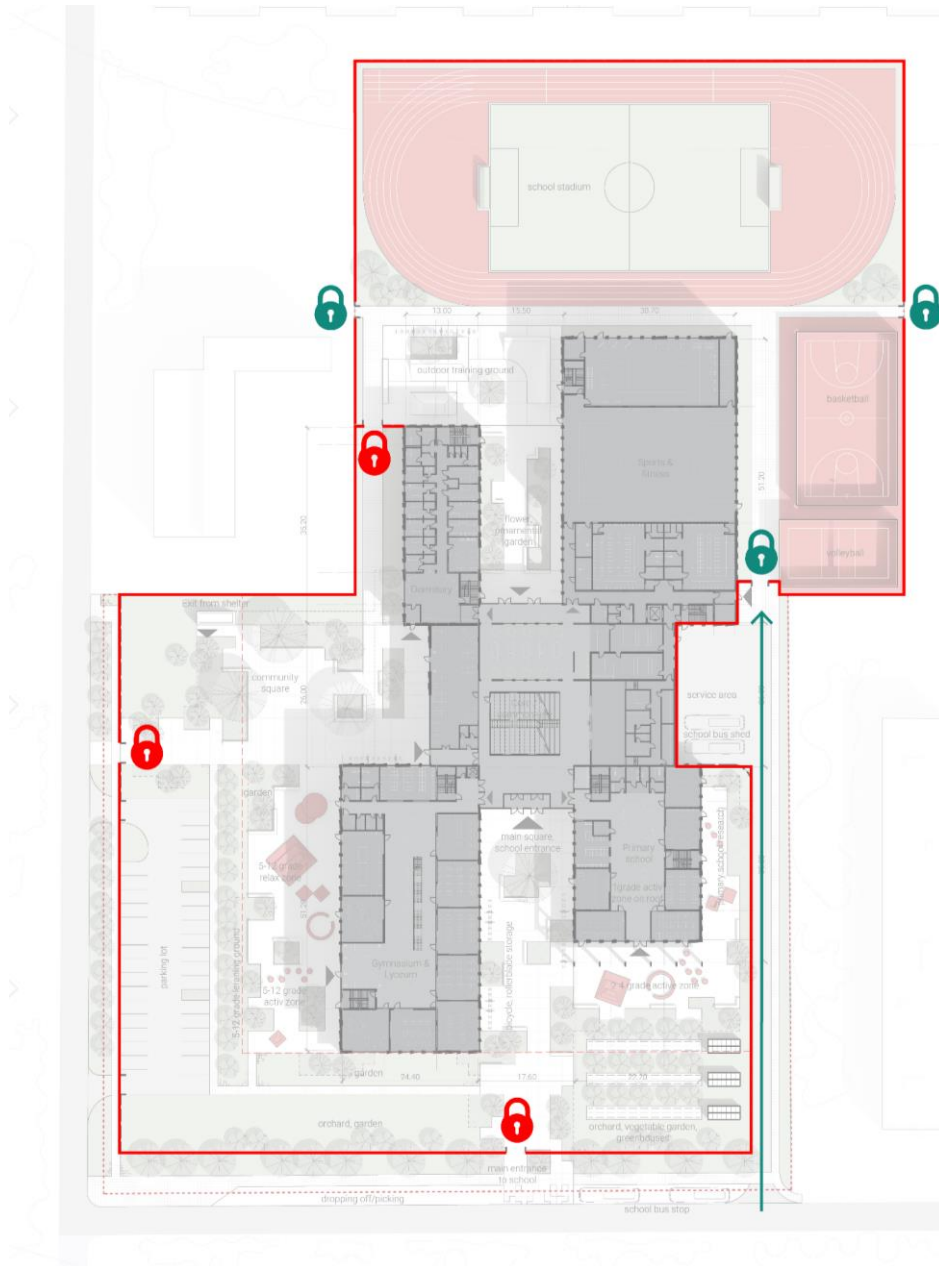
## Security

Modular volume scheme connected through central (and publicly most welcoming) volume create a safe and easy to monitor space for all occasions. As the proposal intends, the central volume can become a community centre during after school hours, therefore it is important to set strict guidelines for accessing school premises.

Proposal's functional layout and concept of overlapping communication hubs between volumes present a great opportunity to limit access to all or some of the school volume modules at any given time. That means that public access can be assigned to only **(1)** core volume, **(2)** only certain school or sports block volume or **(3)** core and some school premises (volume or certain floors). The third option can be beneficial when using core as a community centre and giving access to some school specific premises (like workshops intentionally places on the ground floor) to further extend functionality of community centre (craft workshops, masterclasses etc.)



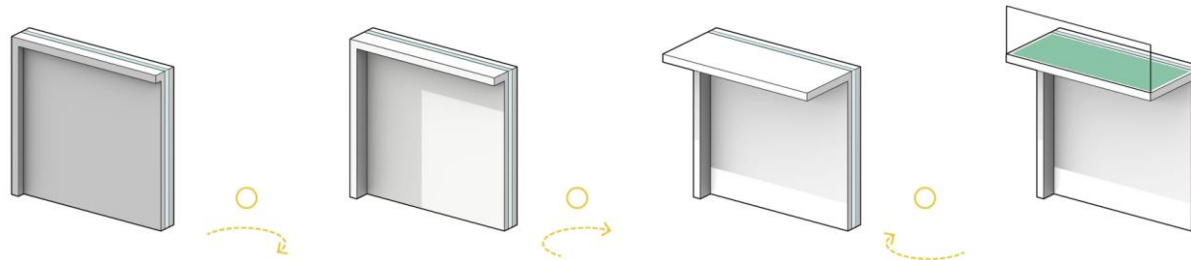
On the site level, the whole school area is designed to be fenced with the exception of service road which at the same time acts as an access to indoor and outdoor sports facilities, meaning that for after school hours local community can use sports hall with separate entrance, stadium, basketball and volleyball courts, as well as skatepark without conflicting security measures for school area.



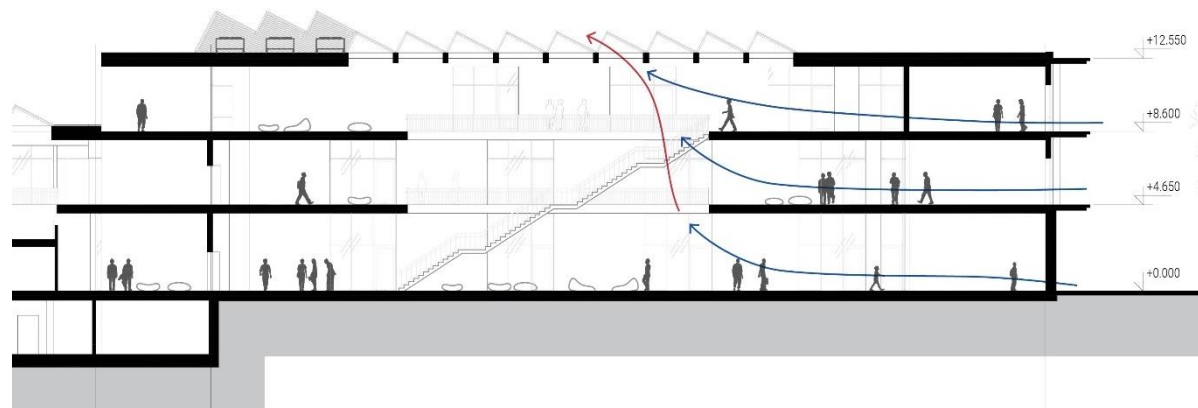


## Sustainability

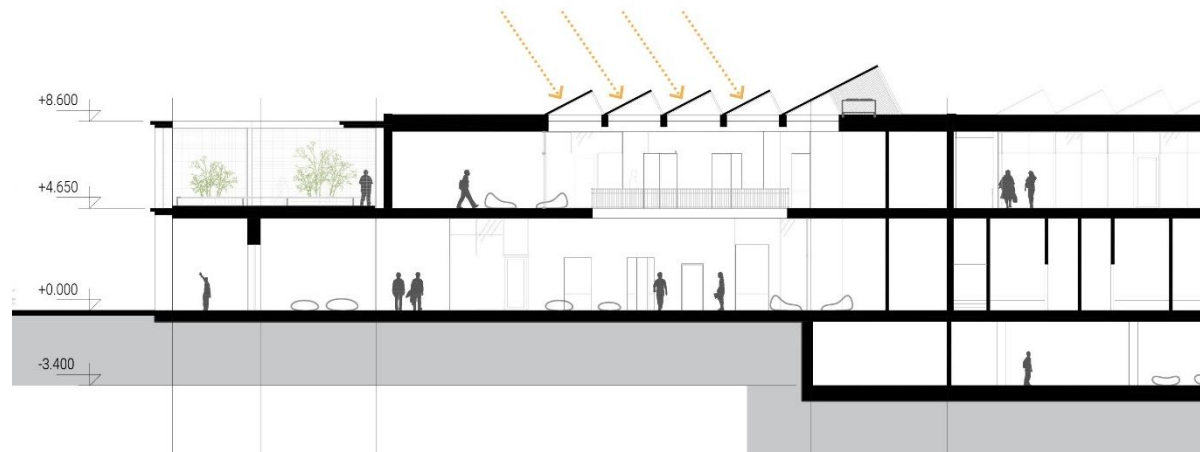
One of the most evident sustainability factors is encoded into building's façade, where façade modules are fabricated using recycled concrete and geometrically crafted according to solar orientation.



Some of the key sustainability aspects lie in atrium-based room layout. Not only atriums create cosy spaces and visual connection throughout all levels, it also provides natural chimney effect which, combined with HVAC and fire safety systems can be used to cool interior spaces on hot days, as well as provide fresh outdoor air.



In order to limit direct sunlight through skylights, structures are placed over the openings with solar panels as shading surfaces. At the back of each such module block is a raised part of the structure which conveniently provides space for technical equipment seamlessly integrating such spaces into building's design.



Solar panels as shading devices become a natural part of interior landscape.



Part of the landscaping sustainability concept is replacing water demanding lawn areas with local wildlife plants and flowers, obtaining a concept where plants by design require less maintenance while also diversifying site's flora.



Site (in hypothetical situation A)		
	Unit of measurement	Quantity
Site surface area	sq.m.	22,800
Site development intensity	%	46.1%
Site development density (building's footprint + roads, parkings)	%	30.7%
Green portion of the site (plantation only)	%	31.1%
Building(s) / part of the building(s)		
Primary education		
Total floor area (Загальна площа блоку)	sq.m.	1 198.34
Gross floor area (Загальна площа приміщень)	sq.m.	1 114.54
Usable floor area (Корисна площа блоку)	sq.m.	881.84
Volume of the building / part of the building (Будівельний об'єм)	cubic metres	6 208.94
Number of floors	pcs.	2
Height of the building / part of the building	m	8.95
Secondary education block. Gymnasium, lyceum.		

Total floor area (Загальна площа блоку)	sq.m.	3 604.95
Gross floor area (Загальна площа приміщень)	sq.m.	3 374.57
Usable floor area (Корисна площа блоку)	sq.m.	3 020.24
Volume of the building / part of the building (Будівельний об'єм)	cubic metres	17 714.17
Number of floors	pcs.	3
Height of the building / part of the building	m	12.9
Sports block		
Total floor area (Загальна площа блоку)	sq.m.	2 457.07
Gross floor area (Загальна площа приміщень)	sq.m.	2 318.70
Usable floor area (Корисна площа блоку)	sq.m.	2 140.08
Volume of the building / part of the building (Будівельний об'єм)	cubic metres	20 678.26
Number of floors	pcs.	2
Height of the building / part of the building	m	13.35
Core. Shared education, and community spaces		
Total floor area (Загальна площа блоку)	sq.m.	2 362.57
Gross floor area (Загальна площа приміщень)	sq.m.	2 293.72

Usable floor area (Корисна площа блоку)	sq.m.	1 851.72
Volume of the building / part of the building (Будівельний об'єм)	cubic metres	12 647.0
Number of floors	pcs.	2
Height of the building / part of the building	m	8.95
Accommodations. Dormitory		
Total floor area (Загальна площа блоку)	sq.m.	884.65
Gross floor area (Загальна площа приміщень)	sq.m.	799.43
Usable floor area (Корисна площа блоку)	sq.m.	543.69
Volume of the building / part of the building (Будівельний об'єм)	cubic metres	4 875.38
Number of floors	pcs.	2
Height of the building / part of the building	m	8.95
Civil Protection. Dual-use shelter		
Total floor area (Загальна площа блоку)	sq.m.	2 298.923
Gross floor area (Площа всіх приміщень)	sq.m.	2 209.28
Usable floor area (Корисна площа блоку)	sq.m.	1 834.09
Dual-use floor area	sq.m.	958.69

Volume of the building / part of the building (Будівельний об'єм)	cubic metres	9 985.07
Number of floors	pcs.	1
Height of the building / part of the building	m	3.4
<b>General data of the building (total)</b>		
Building coverage area (Площа забудови)	sq.m.	5 599.760
Total floor area (Загальна площа будівлі)	sq.m.	10 507.58
Gross floor area (Площа всіх приміщень)	sq.m.	9 900.96
Usable floor area (Корисна площа будівлі)	sq.m.	8 437.57
Dual-use area in the civil protection structure	sq.m.	958.69
Volume (Будівельний об'єм): - above ground; - underground (shelter);	cubic metres	62 123.75 9 985.07
Number of floors	pcs.	3
Building height	m	13.35

The table is compiled in accordance with the architectural terminology of Ukrainian building standards.

The building volume includes the volume of skylights on the roof.

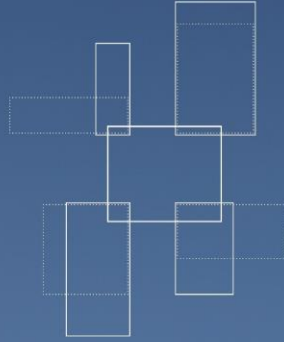
**COGITO**

Explanatory note – Panels



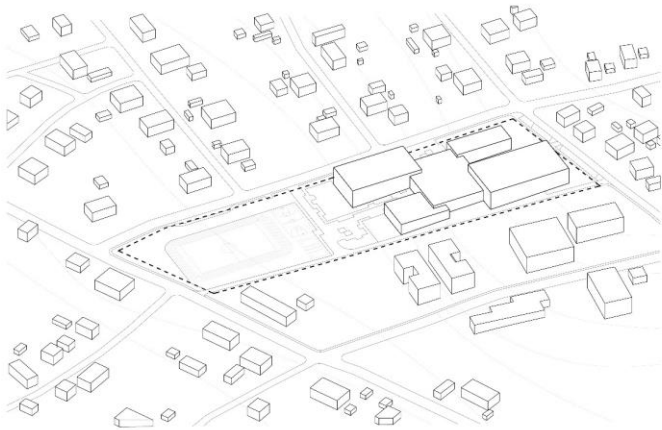


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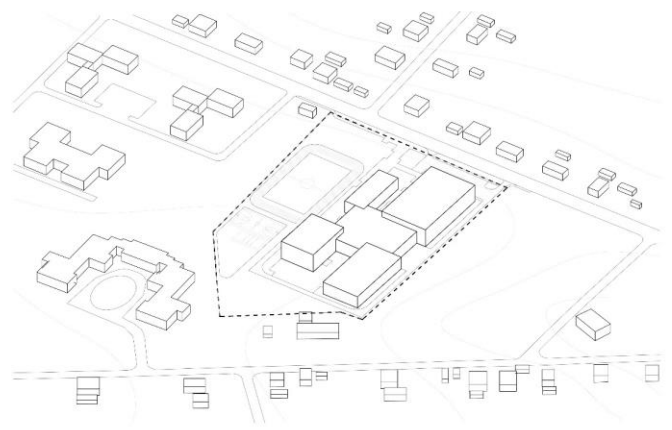




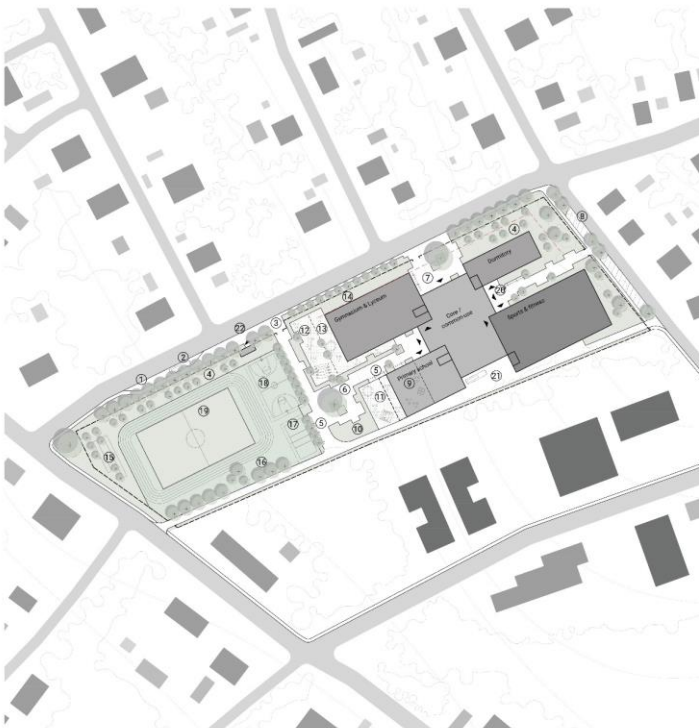




AXONOMETRIC VIEW OF HYPOTHETICAL SITE C



AXONOMETRIC VIEW OF HYPOTHETICAL SITE B



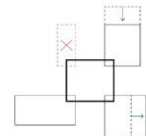
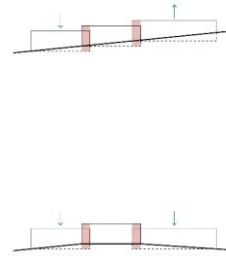
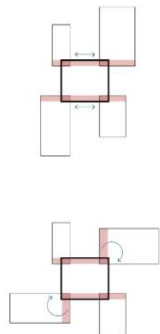
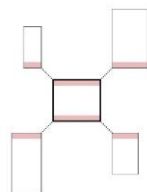
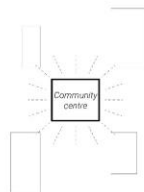
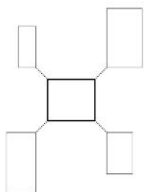
- ① shopping/parking
- ⑤ bicycle, rickshaw storage
- ⑨ 1 grade active zone (on roof)
- ⑬ 5-12 grade walk zone
- ⑰ volleyball
- ⑳ service area
- ② school bus stop
- ⑥ main square, school entrance
- ⑩ primary school research
- ⑭ 5-12 grade training ground
- ⑱ basketball
- ㉑ exit from shelter
- ③ main entrance to school
- ⑦ community square
- ⑪ 14 grade active zone
- ⑮ separate games greenhouses
- ⑲ school stadium
- ④ outdoor garden
- ⑧ parking lot
- ⑫ 9-12 grade active zone
- ⑯ outdoor training ground
- ㉒ entrance to dormitory

SITE DIAGRAM OF HYPOTHETICAL SITE C 1:1000



- ① shopping/parking
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SITE DIAGRAM OF HYPOTHETICAL SITE B 1:1000



Adaptability concept is based on a module system where each volume is physically and programmatically self-sufficient entity connected through the central volume consisting of major public spaces. **Core**

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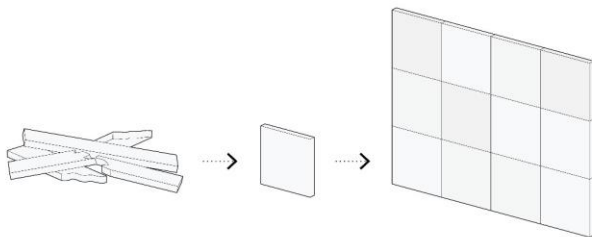
Public library, event hall, medical rehabilitation centre, soup kitchen and designated community premises offer a great possibility to extend building's usage beyond school needs.

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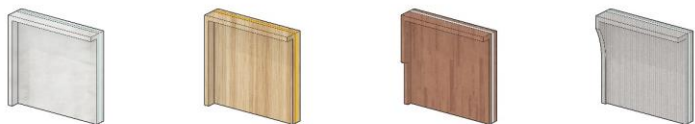
Such a configuration allows each module to be connected in various ways, taking into account plot limitations and topography. Modules can slide along connection zones creating variable overall volume widths and interior courtyard spaces. Depending on plot configuration and sun orientation, volumes can also be rotated according to specific needs of room programme inside of them. And, lastly, convenient communication zones and scattered volume composition allow adjusting volume to terrain, introducing staircases, elevators and ramps (for overcoming slight height differences) in the span of linear communication zones.

Established rule set of modularity principles as well as design language that arises from those rules, provide complete programmatical freedom where volume responds to functional changes while retaining the same compositional and design principles.

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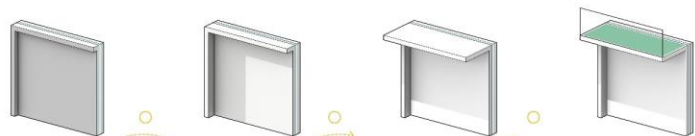


Concept of mock party is further expanded into building structure, both interior and exterior. The proposal is based on pre-manufactured concrete panels (which also use panels, which are insulated inside panels and hollow table panels). All components are manufactured in the same factory, taking into account production and assembly benefits, as well as cost reduction and management associated with self-assembly. The concept is sustainable, taking into account major factors: reducing pre-manufactured components, construction with products of concrete (fully available for recycling).

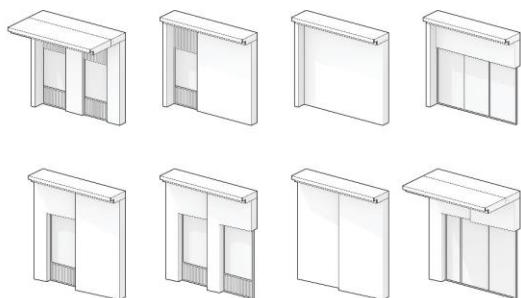


The structural solution of the wall is straight forward and simple for installation in other materials as well. Looking into future sustainability strategies timber material can easily be replaced by other high performance design and natural materials.

The proposal is based on a local design solution, as rather saves to avoid an imported design language. Subsequent design iterations of concrete panels can make the visual image of the building, depending on the architectural solutions, the building cost and architectural quality.



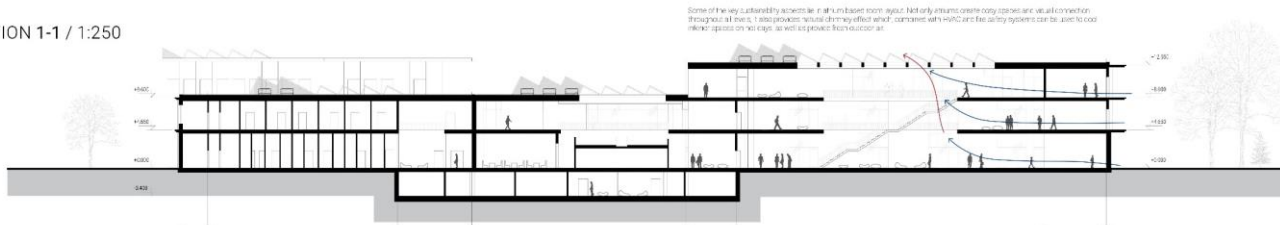
Support design of details of the main structure of the building and building users. For the rest of the building, various options for the use of the building are possible, and the building can be designed to adapt to various uses. For example, additional luxury type dormitories. To create a variety of options for the use of the building, the building can be designed to adapt to various outdoor spaces for certain types of operations and easy conditions for outdoor areas and different outdoor cultural spaces.



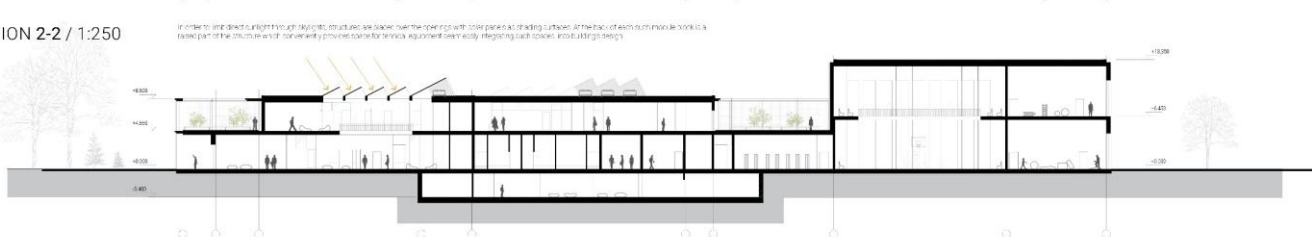
Reduce bio-mimetic steel grid construction, looking into the possibility of using a grid of steel or aluminum. If it is a door with double window, the grid is not needed in the upper part of the door.

For the classroom windows are designed according to the design of the building, requiring 800 mm high windows. Further main design iterations are called with different details, good areas proportions and details available for certain areas of ground level.

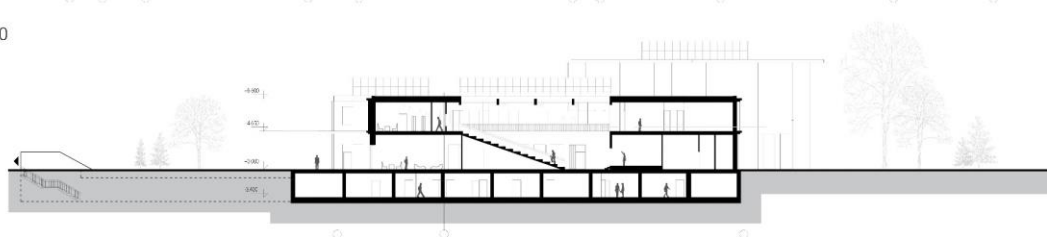
SECTION 1-1 / 1:250



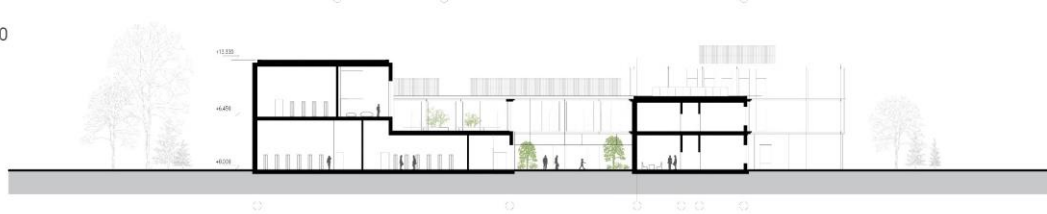
SECTION 2-2 / 1:250



SECTION 3-3 / 1:250



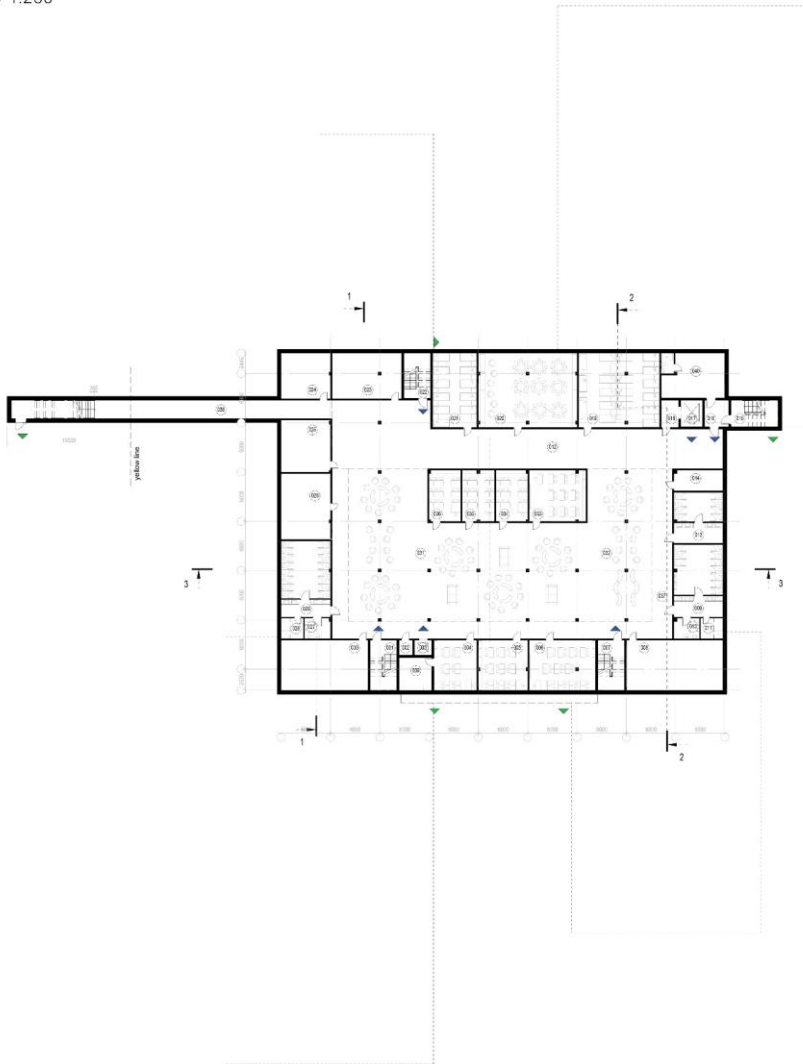
SECTION 4-4 / 1:250





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LEVEL -1 / 1:250



Dish-use shelter		
Number	Name	Area
<b>Shelter</b>		
001	Shower	155
007	Truck and Facilities	53
008	Truck	29
004	Classroom Grades 3-4	317
006	Classroom Grades 3-4	367
005	Classroom Grades 3-4	453
001	Storage	155
000	Staff	712
009	WC	52.2
010	WC accessible toilet	7.8
011	Bathroom	6.7
012	Use of shelter space	2709
013	WC	26.4
014	Technical Facilities	14.7
015	Shower	14.2
016	Entrance	9.3
017	L.L.	8.8
018	Entrance	6.8
019	Sleeping room	88.6
020	Control space	101.7
021	Sleeping room	48.3
022	Shower	17.6
023	Truck and Facilities	46.5
024	Truck and Facilities	33
025	Truck and Facilities	37.7
026	Technical Facilities	47.9
027	WC accessible toilet	7.5
028	Bathroom	6.7
029	WC	56.4
030	Staff	64.3
031	Common space Grades 0-12	412.9
032	Common space Grades 0-2	144.9
033	Classroom Grades 0-12	42.4
034	Classroom Grades 0-12	23.8
035	Classroom Grades 0-12	23.9
036	Classroom Grades 0-12	23.9
037	Classroom	161.8
038	Entrance space from the shelter in case of collapse	66.7
039	Storage	15.7
040	Kitchen	41.0

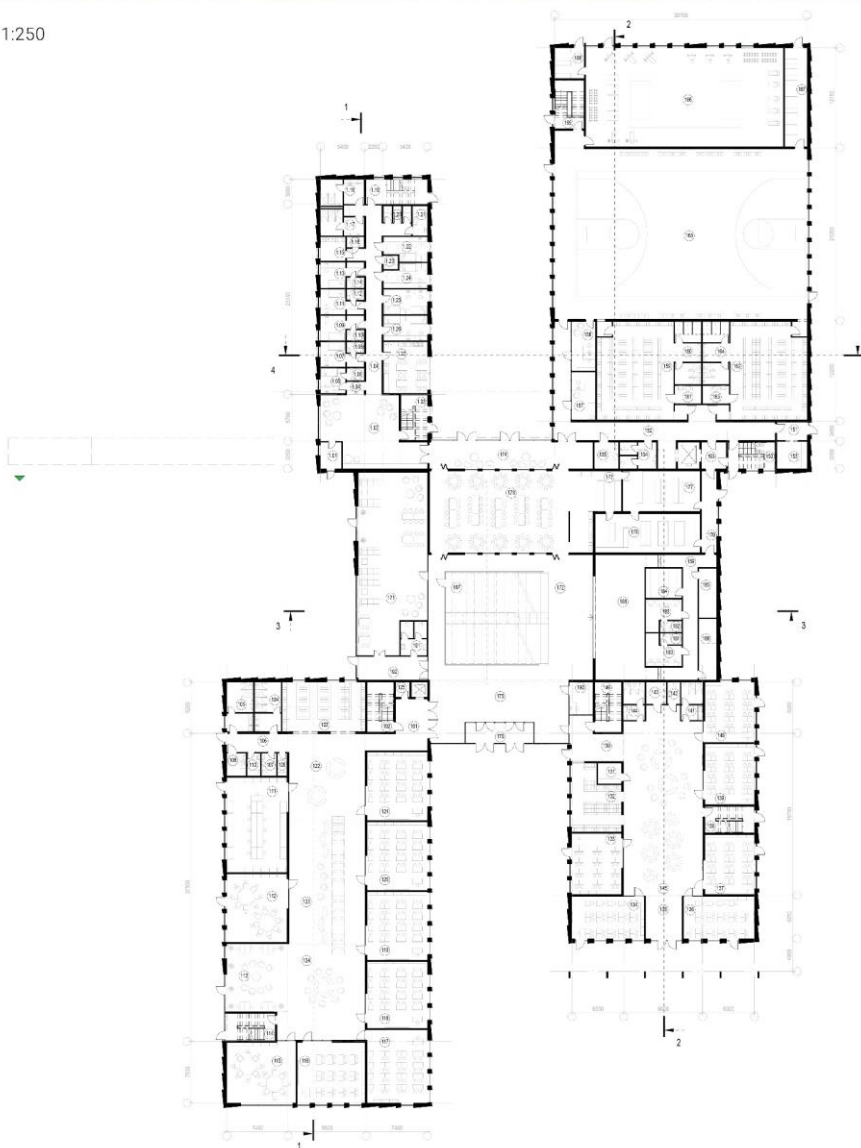
SOUTH ELEVATION / 1:250







LEVEL 1 / 1:250



Ground floor		
Number	Name	Area, sq m
<b>Store</b>		
170	Entrance	21,7
171	Corridor and perimeter	12,9
172	Assembly and meeting space	229,8
173	Buffet	14,2
174	Corridor	46,7
175	Main lobby	103,7
176	First aid room and storage facilities	34,7
177	Staff and security offices	45,1
178	Energy	148,7
179	Staff and delivery entrance	17,8
180	Changing room	13,2
181	WC shower	3,5
182	WC shower	3,5
183	Changing room	13,2
184	Inventory storage	15,7
185	Prop storage	12,9
186	Costume room	13,9
187	Set of museum repository	49,9
188	Stage	97,2
189	Backstage area	41,5
190	Set of control panel room	11,6
191	WC	13,2
192	Entrance	23,8
193	Entrance	5,6
<b>Dormitory</b>		
101	Entrance	8,2
102	Corridor and elevator room	47,2
103	Staircase	17,5
104	Corridor	40,1
105	Canteen's room	5,9
106	Canteen's rest bath	17,9
107	Shower room for female	17,8
108	Shower room for female	2,7
109	Shower room for female	17,8
110	Shower room for female	2,7
111	Shower room for female	17,8
112	Shower room for female	2,7
113	Shower room for female	17,8
114	Shower room for female	2,7
115	Faculty room	8,9
116	Storage	2,7
117	WC	14,5
118	WC	14,4
119	Staircase	22,4
120	Shower	6,5
121	WC accessible toilet	6,5
122	Access to room	14,3
123	Storage	2,9
124	Access to room	14,5
125	Enable room for people	15,2
126	Enable room for people	15,2
127	Kitchen dining room	38,1
<b>Dormitory</b>		
130	Entrance	28,1
131	Storage	7,2
132	Classroom 0 room 2.4	46,2
133	Classroom 0 room 2.4	46,2
134	Classroom 0 room 2.4	46,2
135	Entrance	23,9
136	Classroom 0 room 2.4	46,2
137	Classroom 0 room 2.4	46,2
138	Storage	15,1
139	Classroom 0 room 2.4	46,2
140	Classroom 0 room 2.4	46,2
141	WC	17,9
142	WC	4,6
143	WC accessible toilet	4,6
144	WC	17,1
145	Faculty room	206,8
146	Staircase	19,5
<b>Exhibition and Lecture</b>		
147	Entrance	31,8
148	Staircase	18,4
149	Corridor	40,1
150	WC	19,2
151	WC	19,2
152	Corridor	16,7
153	WC	4,4
154	WC accessible toilet	4,4
155	Storage	3,1
156	WC shower	4,4
157	WC shower	4,4
158	WC shower	4,4
159	WC shower	4,4
160	WC shower	4,4
161	WC shower	4,4
162	WC shower	4,4
163	WC shower	4,4
164	WC shower	4,4
165	WC shower	4,4
166	WC shower	4,4
167	WC shower	4,4
168	WC shower	4,4
169	WC shower	4,4
170	WC shower	4,4
171	WC shower	4,4
172	WC shower	4,4
173	WC shower	4,4
174	WC shower	4,4
175	WC shower	4,4
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182	WC shower	4,4
183	WC shower	4,4
184	WC shower	4,4
185	WC shower	4,4
186	WC shower	4,4
187	WC shower	4,4
188	WC shower	4,4
189	WC shower	4,4
190	WC shower	4,4
191	WC shower	4,4
192	WC shower	4,4
193	WC shower	4,4
194	WC shower	4,4
195	WC shower	4,4
196	WC shower	4,4
197	WC shower	4,4
198	WC shower	4,4
199	WC shower	4,4
200	WC shower	4,4

WEST ELEVATION / 1:250





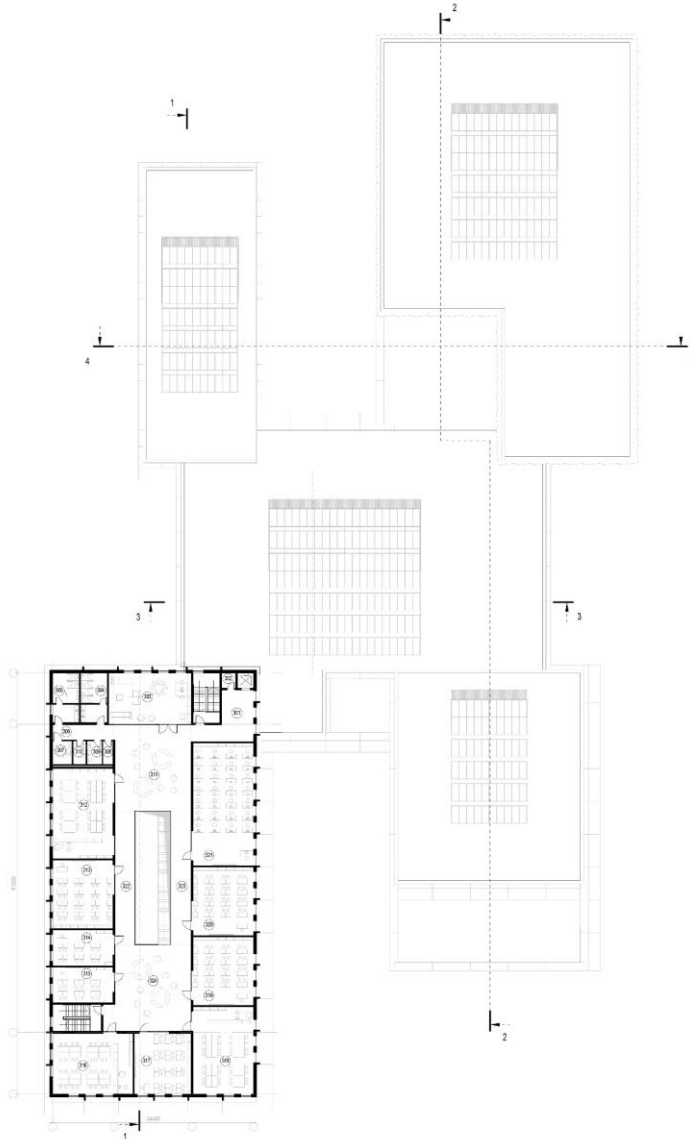




LEVEL 3 / 1:250



COGITO  
ergo sum



Third floor		
Number	Name	Area, sq m
<b>Staircases and Lifts</b>		
301	Entrance	80.8
302	Storage	39
303	Teacher's room	40.8
304	WC	18.2
305	WC	13.1
306	Corridor	15.2
307	WC	6.6
308	Storage	5.5
309	WC	8.1
310	WC	4.4
311	Entrance space	65.2
312	Chemistry laboratory	81.5
313	Chemistry discussion	61.9
314	Liquor Physics classroom	32.4
315	Liquor Physics classroom	32.8
316	Biology laboratory	72.6
317	Biology classroom	31.8
318	Physics laboratory	78.9
319	Physics classroom	61.5
320	Computer science (Theory)	61.5
321	Computer science (Practical)	106.7
322	Corridor	86.1
323	Corridor	41.9
324	Lecture space	121

EAST ELEVATION / 1:250

