

CHAPTER 1

INFORMATION OF PROJECT

1.1 LOCATION OF PROJECT

Project “VIETNAMESE-GERMAN UNIVERSITY (VGU)” Thoi Hoa Ward, Ben Cat District, Binh Duong Province.

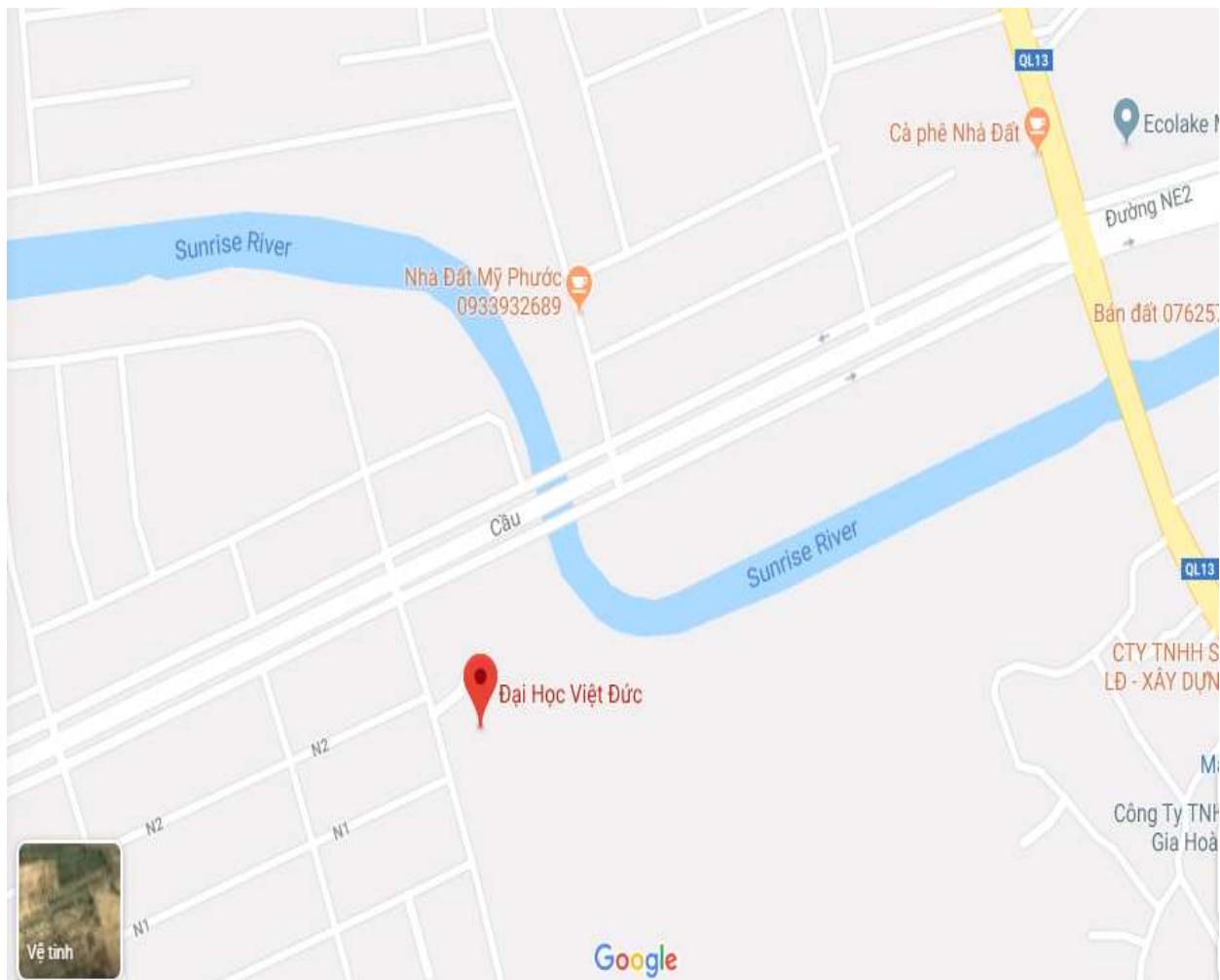


Figure 1.1: Location of project.



Figure 1.2: Overall project.

Area: 9516,21 m²

Includes:

- ⇒ Central plant.
- ⇒ Administration building.
- ⇒ Exhibition Hall.
- ⇒ Ceremony Hall.
- ⇒ Food Court.
- ⇒ Lecture Hall.
- ⇒ Library.
- ⇒ Cluster1, 2, 3, 4, 5, 6.

Because the properties of the project are too large with a total area $S = 9516.21 \text{ m}^2$, we only calculate two areas, including: Central plant and Library.

1.2 FUNCTION:

Provide a quiet study space for students on campus; It can also provide: team learning space, practice, research, document search and rest.

NO	ROOM NAME	CODE ROOM	HEIGHT (m)	LENGTH (m)	WIDTH (m)	AREA ROOM (m ²)
CENTRAL PLANT-1F						
1	Fire room	104	4.25	7.4	4.9	36.26
2	Corridor	1CR	4.25	7.4	2.3	17.02
3	Server room	D101	4.25	24.8	10.2	252.96
4	Server room support	D102	4.25	10.2	5.4	55.08

NO	ROOM NAME	CODE ROOM	HEIGHT (m)	LENGTH (m)	WIDTH (m)	AREA ROOM
5	Chillers and Pumps room	C101	7.6	38	22.6	858.8
6	Corridor	E106	7.6	38.1	4.1	156.21
7	Fuel Storage Tank	E101	7.6	12.1	4.1	49.61
8	Transformer room	E102	7.6	12.1	8.4	101.64
9	Medium voltage switchgear room	E103	7.6	12.1	8.1	98.01
10	Transformer room	E104	7.6	12.1	8.5	102.85
11	Low voltage switchgear room	E105	7.6	12.1	8	96.8
12	Corridor	1CR2	4.25	2.5	2.3	5.75
13	Control center	W103	4.25	10.2	10.1	103.02
14	Technical room	W102	4.25	10.2	4.7	47.94
15	Odor treatment room	W101	4.25	10.2	5.1	52.02
CENTRAL PLANT-2F						
16	UPS battery room	D201	3.6	7.3	4.9	35.77
17	Corridor	2CR3	3.6	7.3	2.3	16.79
18	Server room support	D200	3.6	10.2	9	91.8
19	Server room	D202	3.6	17.8	10.2	181.56
20	Storage	D205	3.6	7.5	3	22.5
21	Corridor	2CR2	3.6	12.1	4.1	49.61
22	Janitor	2JC1	3.6	9.8	2.6	25.48
23	Corridor-hành lang	2CR4	3.6	10.1	2.9	29.29
24	Electrical workroom area	D203	3.6	10.1	7.2	72.72
25	Control room	D204	3.6	10.2	4.8	48.96
CENTRAL PLANT-RF						
26	Cooling towers	C301	3	30	17.4	522
27	Generator room	E301	3	20.3	17.2	349.16
28	Mechanical room	300B	3	17.2	9.7	166.84
29	AHU sever	D301	3	30	6.4	192
LIBRARY-1F						
30	Conference/Training room	114	4.85	11.7	9.3	108.81
31	Storage	114A	4.85	3.6	2.1	7.56
32	Janitor	1JC1	4.85	2.7	2.4	6.48
33	Frist Aid	102	4.85	6	3.1	18.6
34	Aid relaxing room	102B	4.85	3.9	3	11.7
35	Storage	103A	4.85	5.7	2.1	11.97
36	Book return room	101	4.85	7.3	3.6	26.28

NO	ROOM NAME	CODE ROOM	HEIGHT (m)	LENGTH (m)	WIDTH (m)	AREA ROOM
37	Corridor	1CR1	4.85	15.5	3.6	55.8
38	Post room	104	4.85	4.9	3.7	18.13
39	Storage/Receiving	107	4.85	4.6	4	18.4
40	Porter room	113	4.85	3.1	2.4	7.44
41	Uni shop	112	4.85	14.6	10.6	154.76
42	Coffee shop	110	4.85	9.1	4.2	38.22
43	Coffee Storage room	111	4.85	6.1	1.5	9.15
44	Mechanical room	109	4.85	6	4.3	25.8
45	Elec/tele	108	4.85	2.7	2.4	6.48
LIBRARY-2F						
46	Journal display/reading	215	3.625	3.3	3.2	10.56
47	Journal display/reading	215	3.625	3.3	3.2	10.56
48	Journal display/reading	214	3.625	3.1	3	9.3
49	Journal display/reading	214	3.625	3.1	3	9.3
50	Group Workroom	217	3.625	5.8	4	23.2
51	Group Workroom	218	3.625	5.8	4	23.2
52	Group Workroom	219	3.625	5.8	4	23.2
53	Group Workroom	220	3.625	5.8	4	23.2
54	Storage	213	3.625	3	2.4	7.2
55	Storage	221	3.625	2.9	2.4	6.96
56	Storage	210	3.625	2.7	2.4	6.48
57	Prints/Storage	209	3.625	5.2	4.5	23.4
58	Kitchen/staff lounge	208	3.625	5.2	3.9	20.28
59	Directors office	206	3.625	5.6	4.8	26.88
60	Assistants desk	205	3.625	4.8	2.5	12
61	Meeting room	203	3.625	8.2	4.8	39.36
62	Computer pool	225	3.625	19.5	6.1	118.95
LIBRARY-3F						
63	Reading theatre	316	2.925	12.1	6.2	75.02
64	Reading theatre	BS2	2.925	21	16	336
65	Book stacks/Reading room	BS1	2.925	74.4	16.6	1235.04
66	Learing room	310	2.925	5.4	3.4	18.36
67	Learing room	311	2.925	5.4	3.4	18.36
68	Storage	312	2.925	2.5	1.5	3.75
69	Copy/print	313	2.925	2.6	1.5	3.9

NO	ROOM NAME	CODE ROOM	HEIGHT (m)	LENGTH (m)	WIDTH (m)	AREA ROOM
70	Group Workroom	303	2.925	4.9	4.2	20.58
71	Group Workroom	304	2.925	4.9	3.8	18.62
72	Group Workroom	307	2.925	4.9	2.2	10.78
73	Group Workroom	308	2.925	4.9	2.2	10.78
74	Group Workroom	309	2.925	4.9	3.3	16.17
75	Study carells	315	2.925	12.1	7.5	90.75
76	Multimedia workroom	314	2.925	9	8.7	78.3
LIBRARY-4F						
77	Book stacks/Reading room	BS1	2	74.4	18	1339.2
78	Reading room	BS2	2	21.4	13.8	295.32
LIBRARY-5F						
79	Yard		2.5	83.5	38.2	3189.7
80	Roof mechanical room	R1	2.5	21.4	13.8	295.32
81	Roof mechanical room	R2	2.5	21.4	13.8	295.32
LIBRARY-RF						
82	Open to below-Sky glass		12.75	86	41	3526
83	Roof		0	25	8.3	207.5

1.3 THE DESIGN CONTENT

1.3.1 ACMV System.

The air conditioning is an important field in cold techniques, it involved in many areas of the economy such as the spearhead: precise mechanical, electronic engineering, information technology, aerospace and specially created good facilities for serving the people.

The air conditioner is a branch of science that studies the methods and technology to create and maintain an environment of air line with a production technology, material, equipment or bring the comfort for your child the human person. The air conditioner is to create and maintain:

- + The temperature of the air.
- + The humidity of the air.
- + The circulation and recirculation of the air.
- + Dust handling system and the components of the air.

We can classify according to different purposes:

- + Air conditioners for machining, processing, for business.
- + Air conditioner service for facilities, human activities.
- + Air conditioning with narrower content, the primary purpose is to create the proper temperature as required.

In addition to the task of maintaining the temperature in the space need to air condition at the required level, the air conditioning system to keep the humidity in the space that stagnation in a specified level. Besides, the need to pay attention to the issue of ensuring the clean level of air, not noise mode and the circulation of airline.

1.3.2 Electrical System.

Electrical Supply System:

- + *The Power:*

High power supply voltage 24kV for works taken from the region's power grid. Power supply points will do the city power company.

- + *Electric capacity:*

The use of mobile devices in the works include: lighting system, electrical, Elevator, domestic water pumps and fire, air-conditioning systems,...

High-voltage supplies for works taken from the region's electrical grid to power supply connection points, high-voltage, low-voltage cabinets, transformer stations and backup generators are not in range of this design. This section is expressed in a different design.

- + *Supply and distribution of electricity:*

Power supply from the electrical cabinet of the Republic electric to use radio systems (BUS BAR), go under the technical box.

With the Office block, power supply 0, 4kV away from electrical low-voltage of the transformer to the electric sound system using floor led (BUS BAR), go under the technical box. Power supply from the electrical cabinet floor office block to the electrical room use single-core copper wire PVC cable trough the follower on the false ceiling.

Power supply from the electrical cabinet of the electrical cabinet floor to the Office block using copper core XLPE insulated power cable follow the cable ladders in the technical box.

Wire go in the House using copper core wire, 0.6/1 kV PVC insulated and are threaded in the hard plastic pipes buried underground walls, ceilings or go on the false ceiling.

Electrical lighting system:

The lighting system in the House is designed as the standard artificial lighting in the civil works (TCXD 16:1986), lighting in public buildings primarily used fluorescent lamps; stair lighting using lamps-compact ball ceiling lighting, observation lounge, hallway lights shadow compact downlight minimum magnitude in the following areas:

- Reading room: 200 lux
- Storage: 75 lux
- Corridor, Wc, Storage: 100 lux
- Meeting room: 150 lux
- Journal Display: 100 lux

Lighting control library block area, hallway, lounge, stairs, garage using a switch mounted near doors or convenient location. Office area (the area rent) are not equipped with switches (rent will self powered by his own design).

The lights and the light exit will be deployed at all the exits to the main Hall lobby, such as stairs, and other public areas. The area of stair use had trouble lighting the reserve battery 3 h. Lobby area, the lobby used lamp downlight, the area of the garage used fluorescent lamp, the lamp is from UPS power supply (in the basement) with the fire resistant cables ensure the maintenance for the lights to work within 3 hours when the power supply to the area is interrupted.

External lighting system:

Outdoor lighting using lamps grounds, to ensure that the light for traffic and protect the outside works. The type of lamp used as street lights, high pressure mercury bulb, mounted on steel octagonal column, lamps, lights, tree mushroom ... depending on the landscape where installed. Outdoor lighting system be operated automatically or manually. Lighting control cabinets in addition to the security room was put in the room, because the security guards operate.

1.3.3 Building managementsystem (BMS)

Building management systems (BMS) are most commonly implemented in large projects with extensive mechanical, HVAC, and electrical systems. Systems linked to a BMS

typically represent 40% of a building's energy usage; if lighting is included, this number approaches to 70%. BMS systems are a critical component to managing energy demand. Improperly configured BMS systems are believed to account for 20% of building energy usage, or approximately 8% of total energy usage in the United States.^{[1][2]}

In addition to controlling the building's internal environment, BMS systems are sometimes linked to access control (turnstiles and access doors controlling who is allowed access and egress to the building) or other security systems such as closed-circuit television (CCTV) and motion detectors. Fire alarm systems and elevators are also sometimes linked to a BMS for monitoring. In case a fire is detected then only the fire alarm panel could close dampers in the ventilation system to stop smoke spreading, shut down air handlers, start smoke evacuation fans, and send all the elevators to the ground floor and park them to prevent people from using them.

1.3.4 WATER SUPPLY AND DRAINAGE – FIRE FIGHTING

The water supply system in the house is dedicated to bringing water from the water supply network outside the home to all devices, tools or machinery hygiene indoor production.

Factors affecting the selection diagram:

- The function of the construction.
- Treatment of pressure in ensuring water supply pipe outside.
- Required pressure is to bring water to use cuve born, machinery disadvantage.
- The level of university comfort.
- The distribution of equipment and instruments for water in th concentrate or stratification.

Basically water supply in home system can be divided into the following categories:

- According to function.
- Under the pressure of the main water in the street.

We can design carefully before designing, compare plans (economic, technical, convenient,...) to be the most appropriate scheme to ensure the following conditions:

- Use thoroughly pressure water supply pipe outside.
- Economic, easily management, convenient.
- Limit the use of pumps for power consumption and cost many managers.

- Combines well with the house structure of house and noise-proof for home.
- Convenient for use.

An important aspect of the work of Fire Protection are promptly detected the fire is burning, and warned residents in the building and fire organizations. This is the important role of fire detection systems and alarms. Depending on the scenario to prevent fires, the building structure and purpose of use, number of occupants and objects, limits of content and tasks, these systems can provide a number of key functions.

- First, it provides a means to detect the fire is raging as following manually or automatically methods.
- Second, it warned residents to know there is a fire in the building and the need to evacuate.
- A common function if signaling fire notification or fire protection agency organization other emergency response.
- It can close electrical source, air control processing devices and other special activity (lift, fire door..) and it can be used to start up fire system.

Automatic fire alarm system is a system consisting of a set of devices responsible for detecting and alarm when fire occurs. The fires emit signals that can be done automatically by the detector (smoke, heat, fire,...) or by man (through emergency button). The system must operate continuously 24/24 even if power is out.