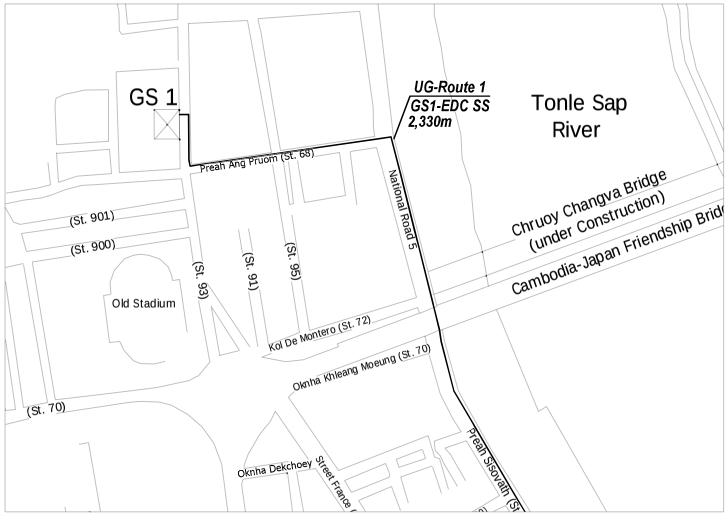

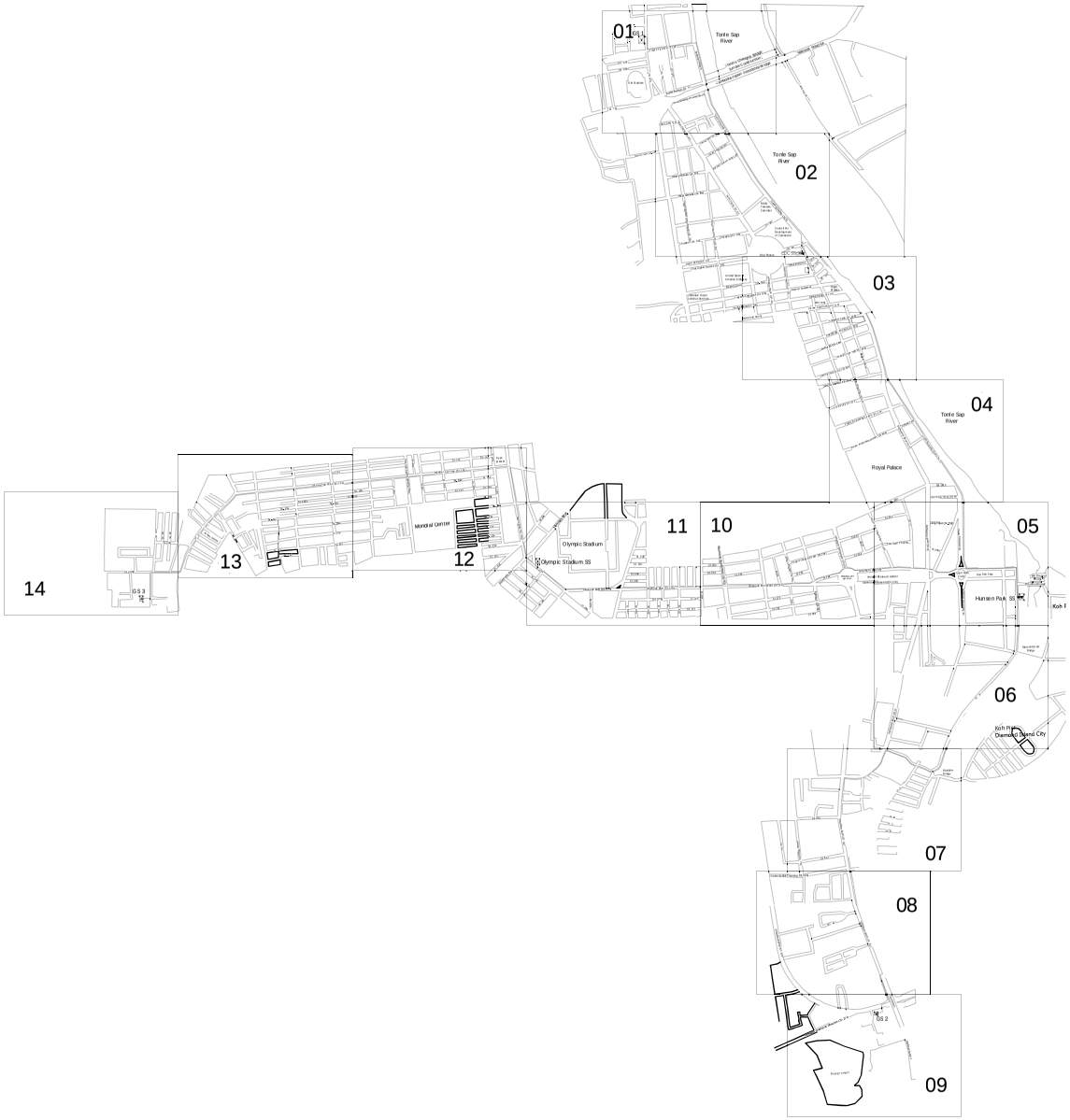

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CONSULTANT:

TEPCO, TEPSCO & NIPPON KOEI
in association with
R&N Engineering Consultants

PROJECT OWNER :

EDC

PROJECT NAME :

Preparatory Survey for Phnom Penh Transmission Line
and
Distribution System Construction Project
EDC SUBSTATION

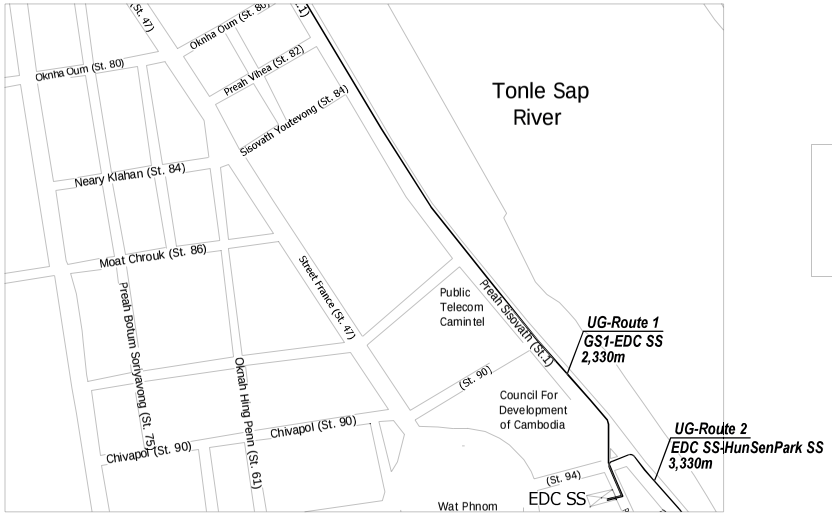
DRAWING No.

01

SHEET No.

1/14

REV.



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CONSULTANT:

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PROJECT OWNER :

EDC

PROJECT NAME :

Preparatory Survey for Phnom Penh Transmission Line
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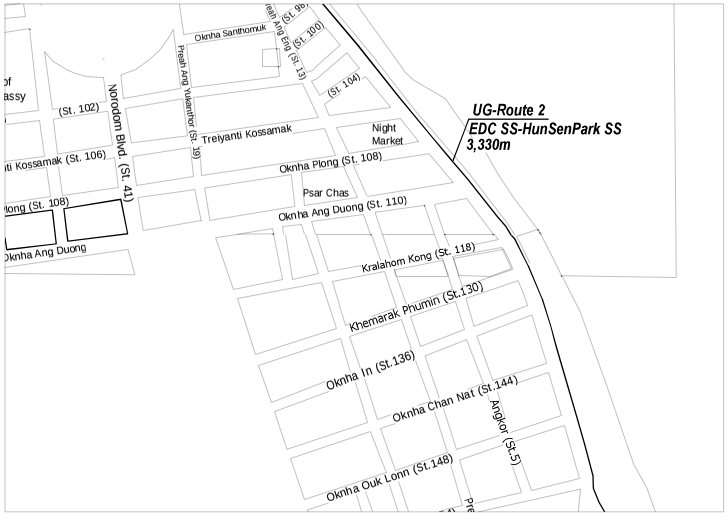
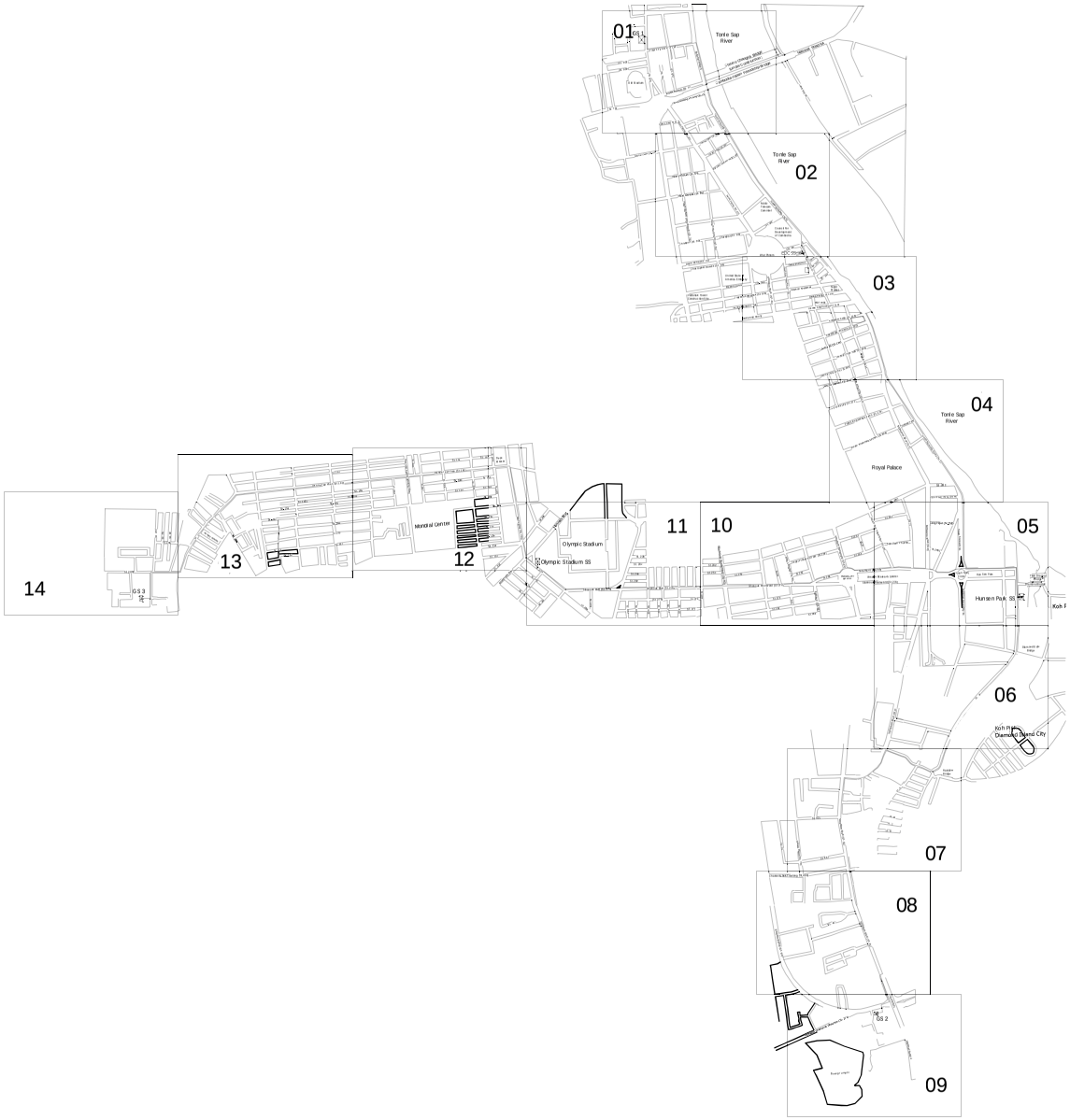
Distribution System Construction Project
EDC SUBSTATION

DRAWING No. 02

SHEET No. 2/14

REV.





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PROJECT OWNER :

EDC

PROJECT NAME :

Preparatory Survey for Phnom Penh Transmission Line
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Distribution System Construction Project
EDC SUBSTATION

DRAWING No.

03

SHEET No.

3/14

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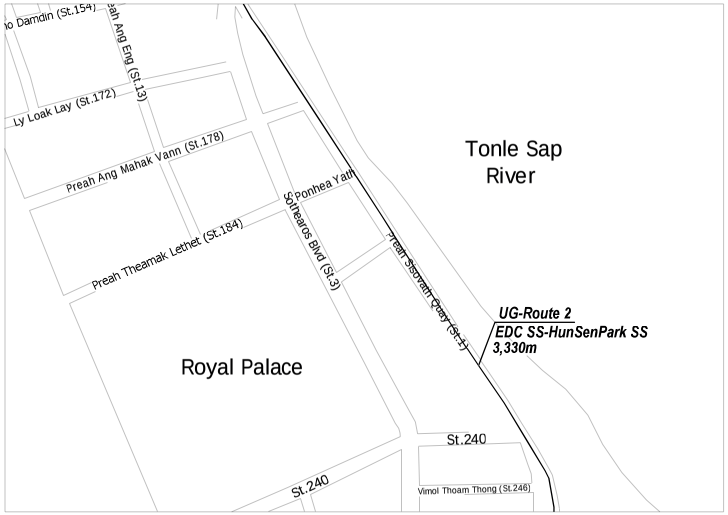

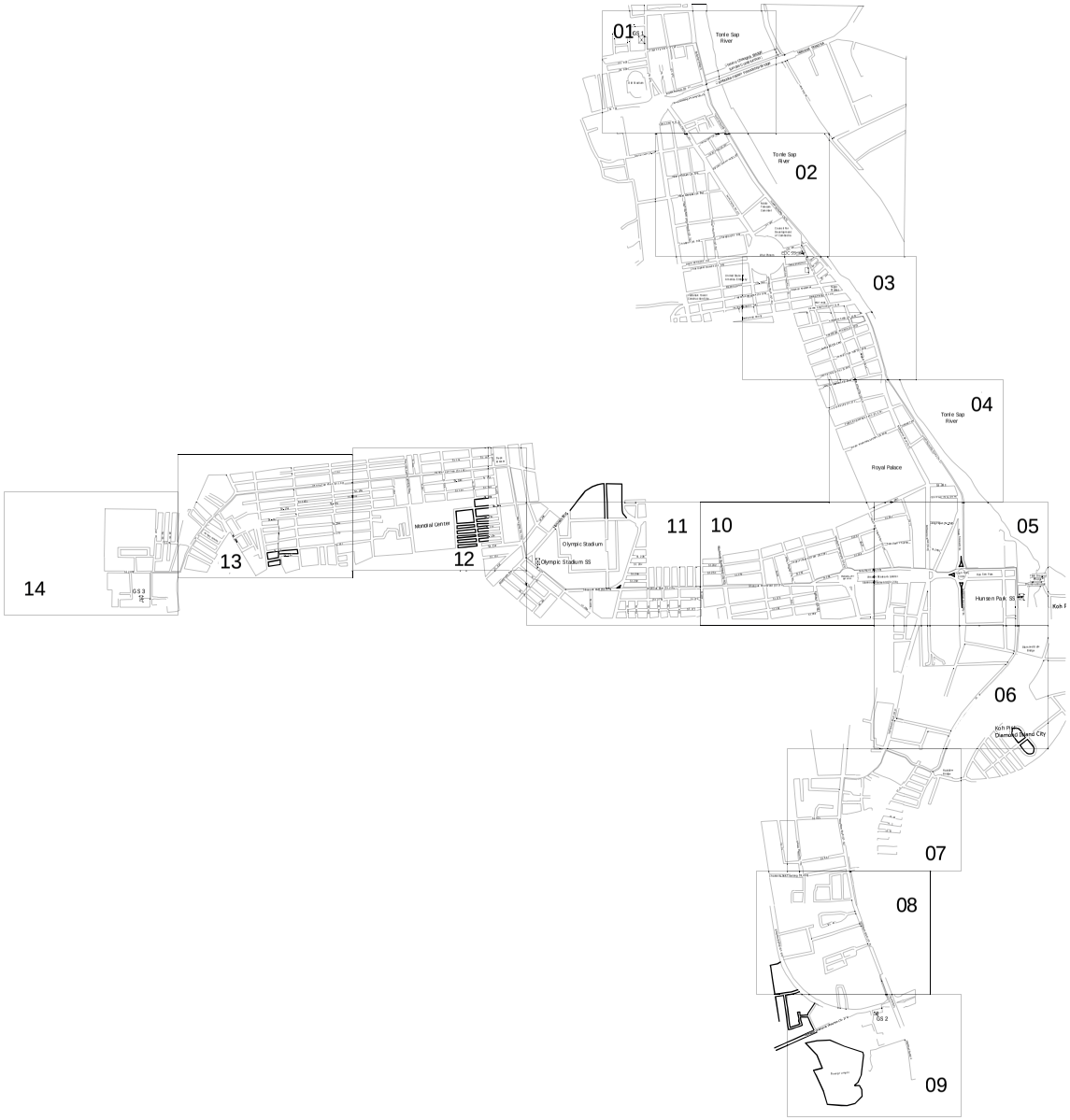

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CONSULTANT:

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PROJECT OWNER :

EDC

PROJECT NAME :

Preparatory Survey for Phnom Penh Transmission Line
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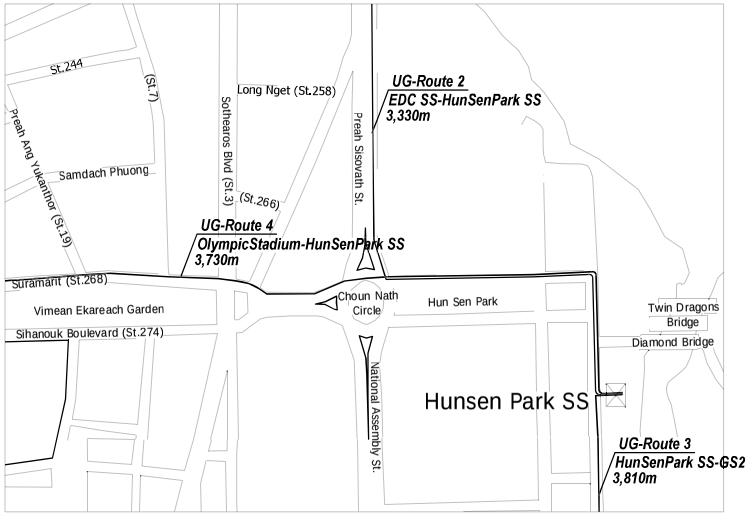
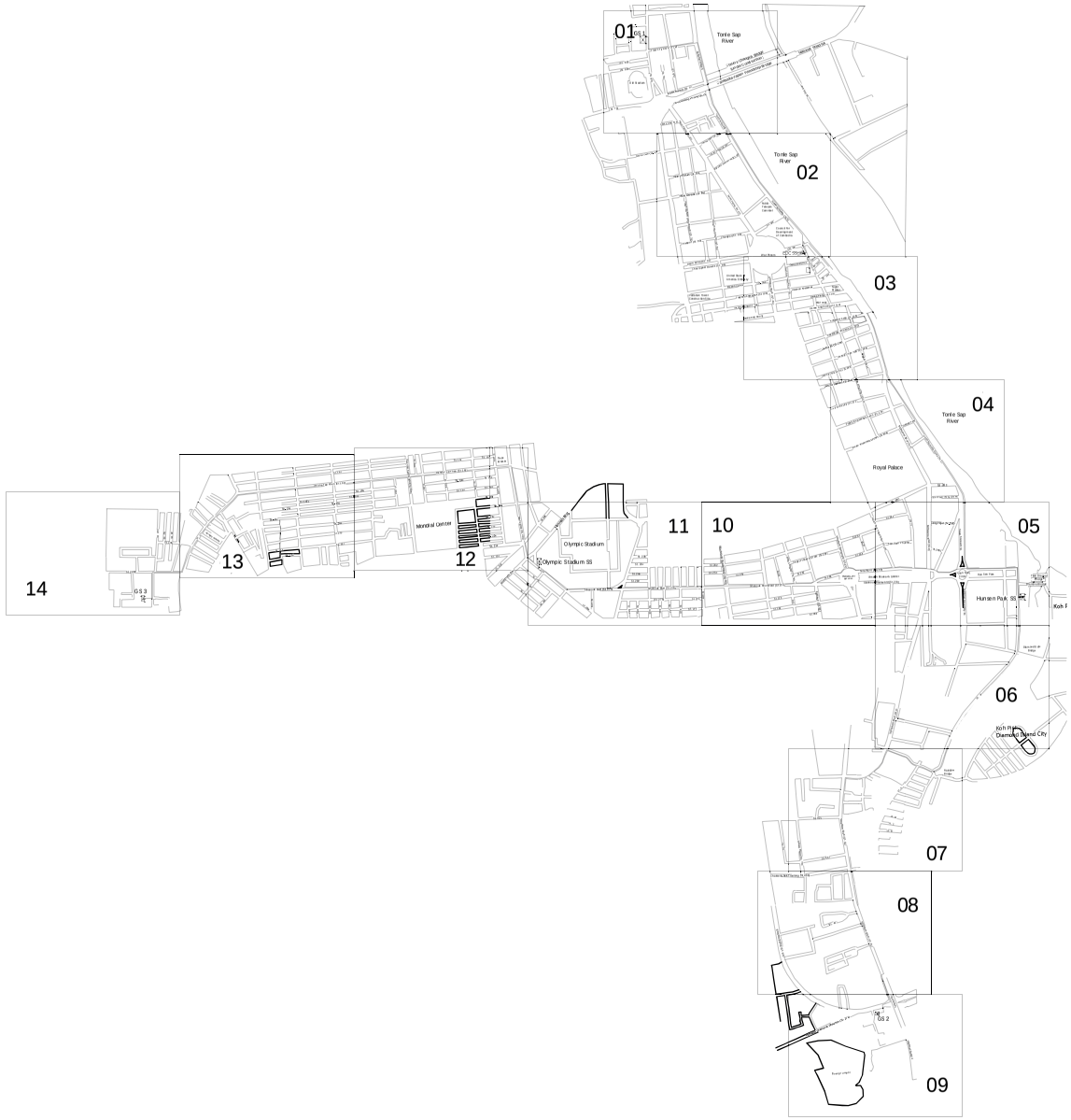
EDC SUBSTATION

DRAWING No. 04

SHEET No. 4/14

REV.





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CONSULTANT:

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Preparatory Survey for Phnom Penh Transmission Line
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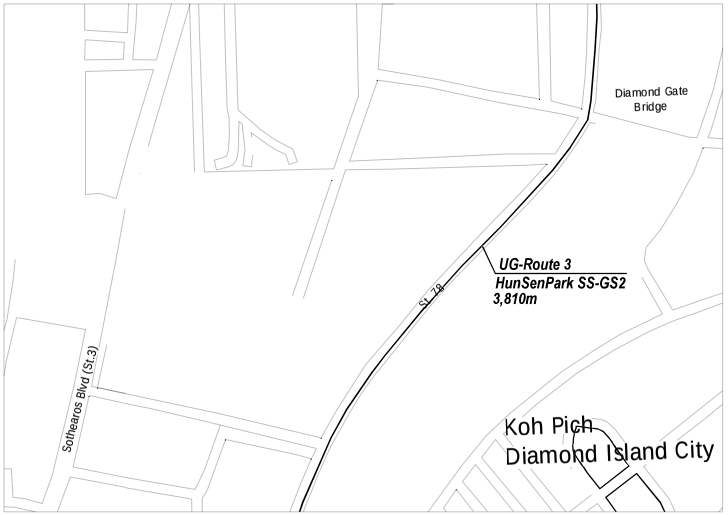
DRAWING No.

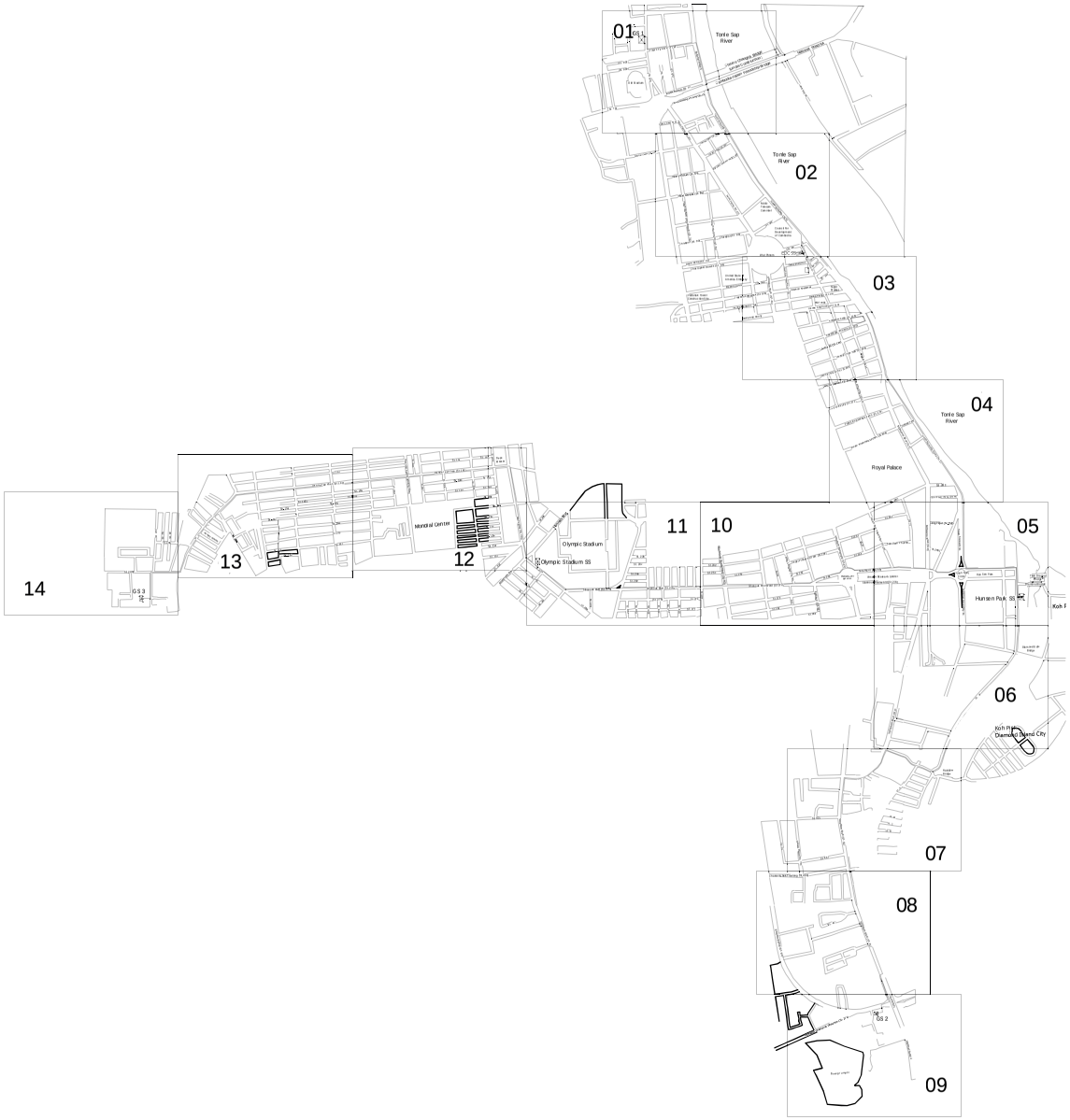
05

SHEET No.

5/14

REV.





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CONSULTANT:

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PROJECT OWNER :

EDC

PROJECT NAME :

Preparatory Survey for Phnom Penh Transmission Line
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EDC SUBSTATION

DRAWING No.

06

SHEET No.

6/14

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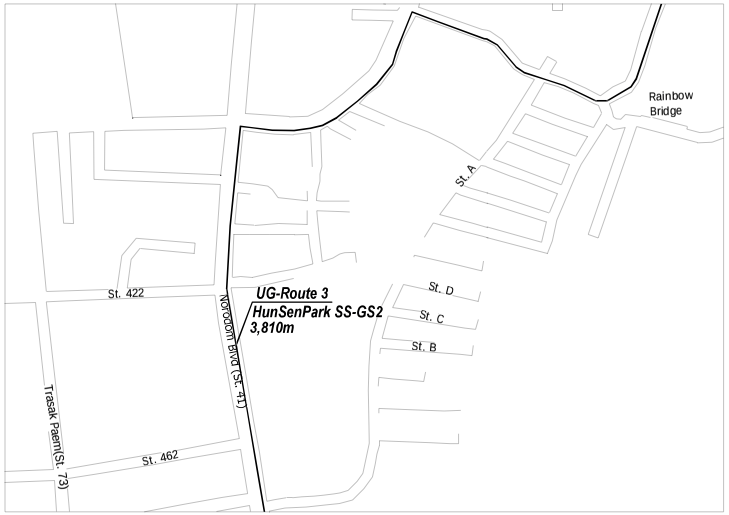

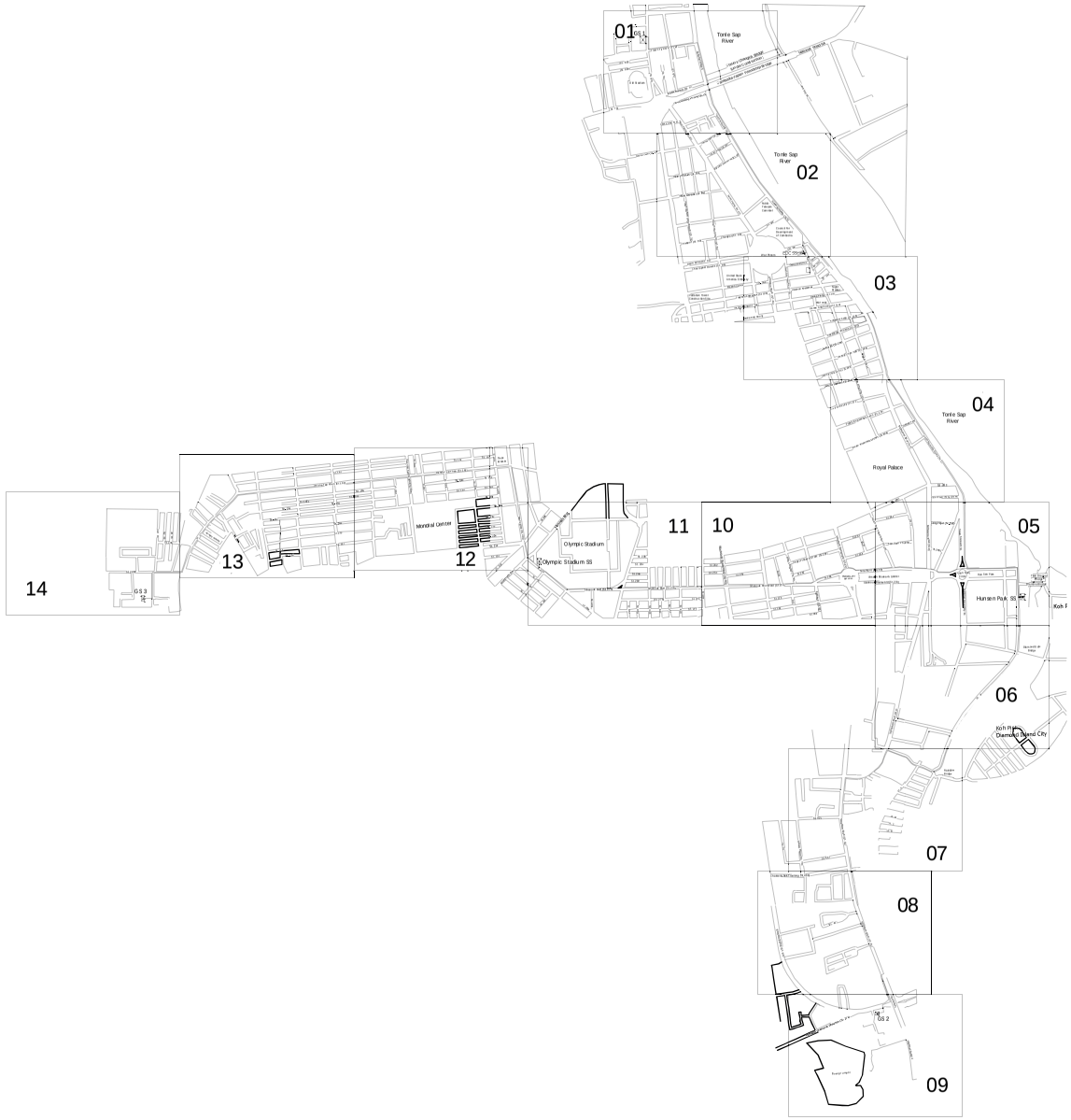

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PROJECT OWNER :

EDC

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Preparatory Survey for Phnom Penh Transmission Line
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Distribution System Construction Project
EDC SUBSTATION

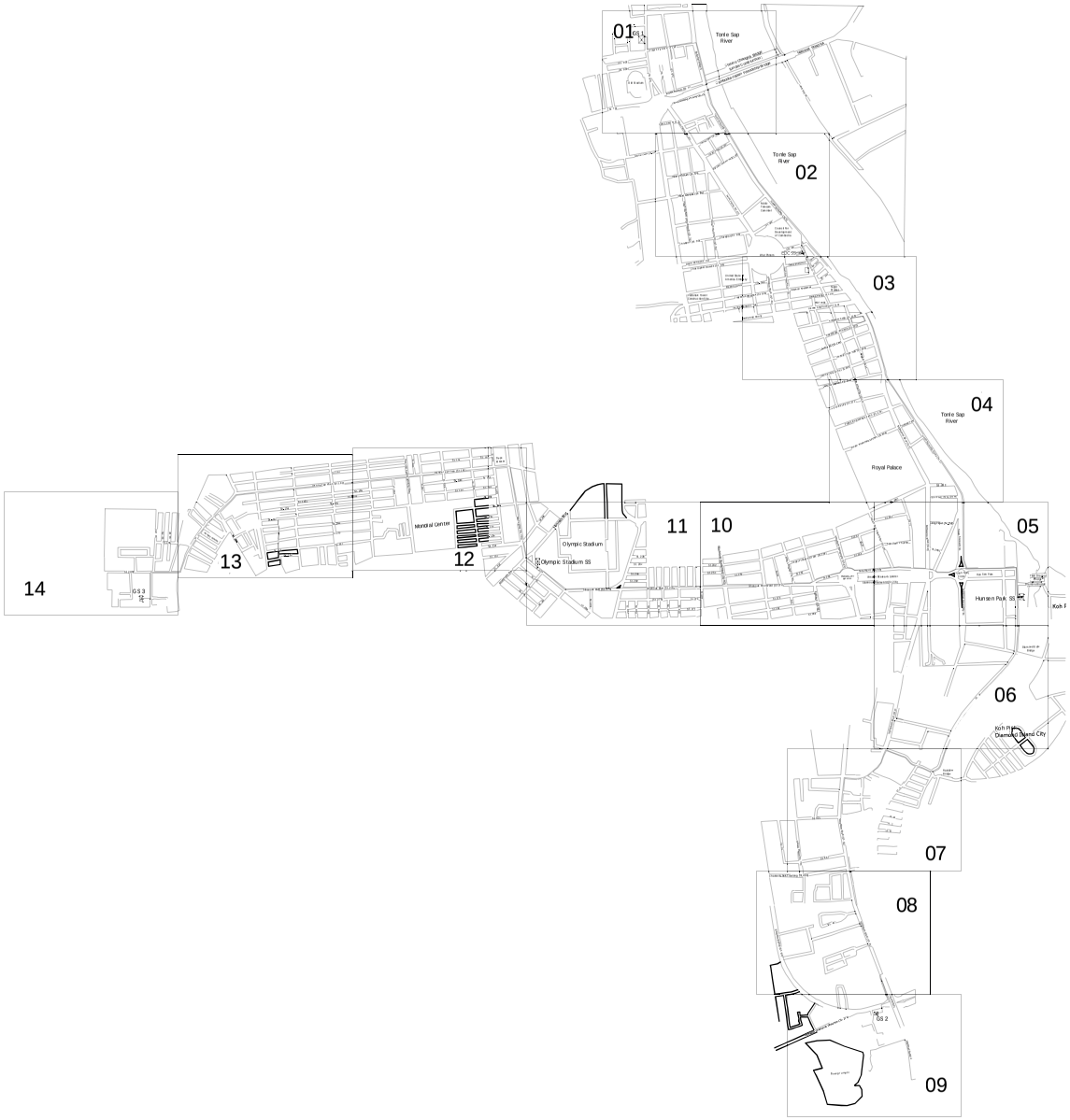
DRAWING No.

07

SHEET No.

7/14

REV.



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CONSULTANT:

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EDC

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Preparatory Survey for Phnom Penh Transmission Line
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Distribution System Construction Project
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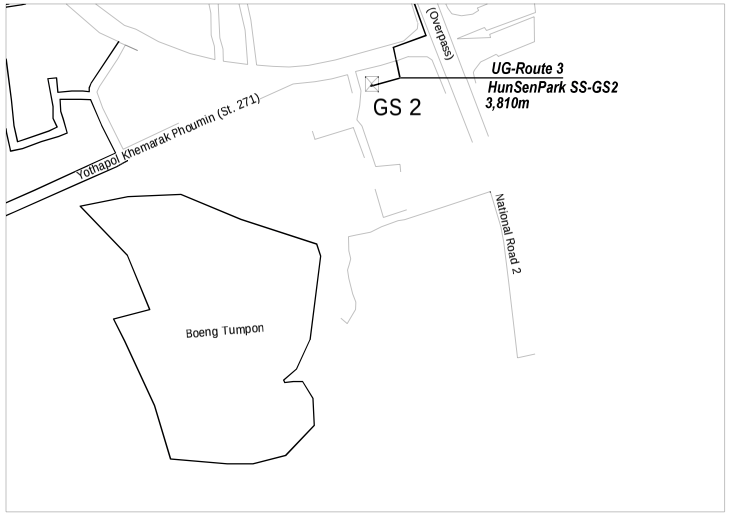
DRAWING No.

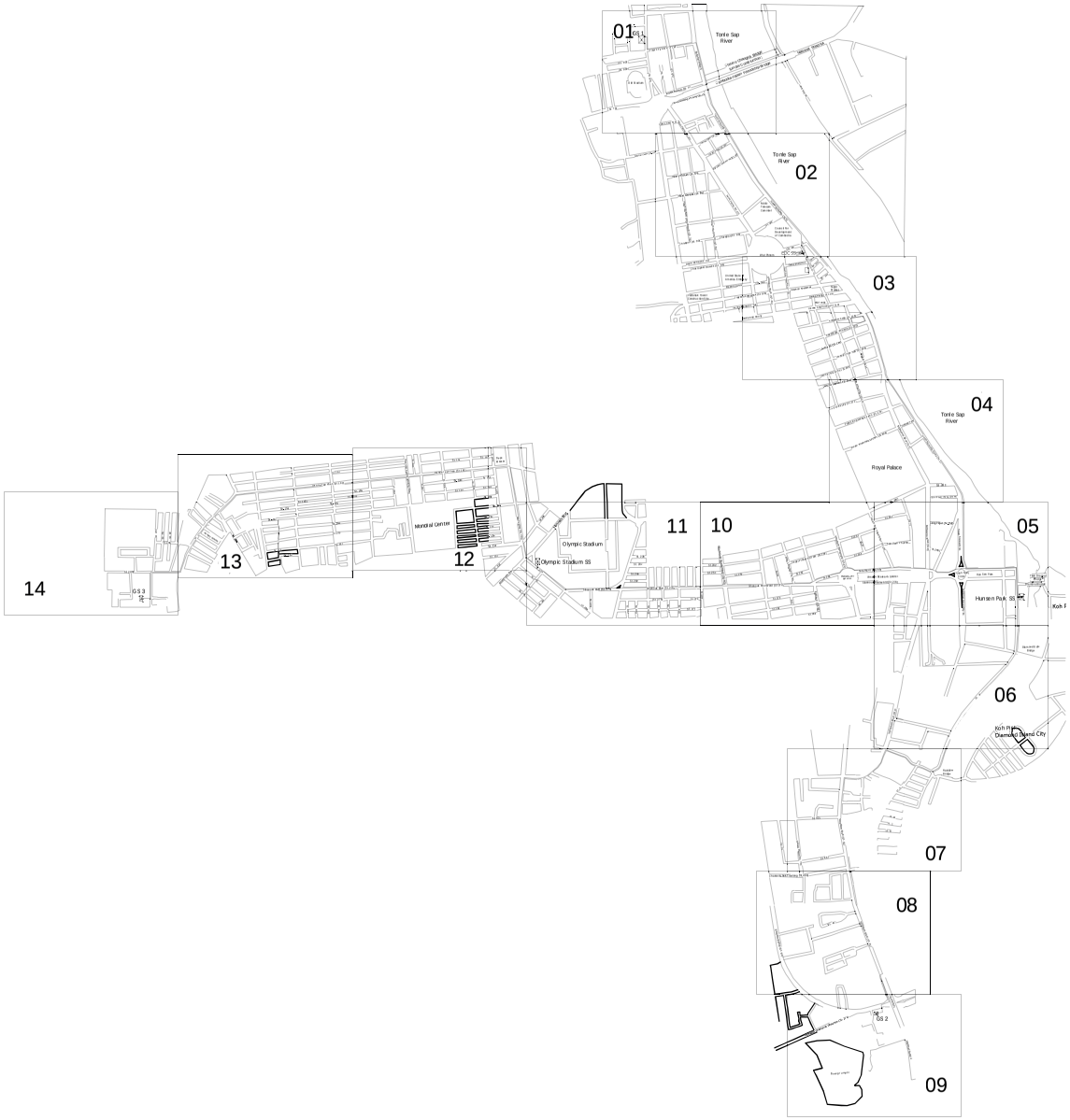
08

SHEET No.

8/14

REV.





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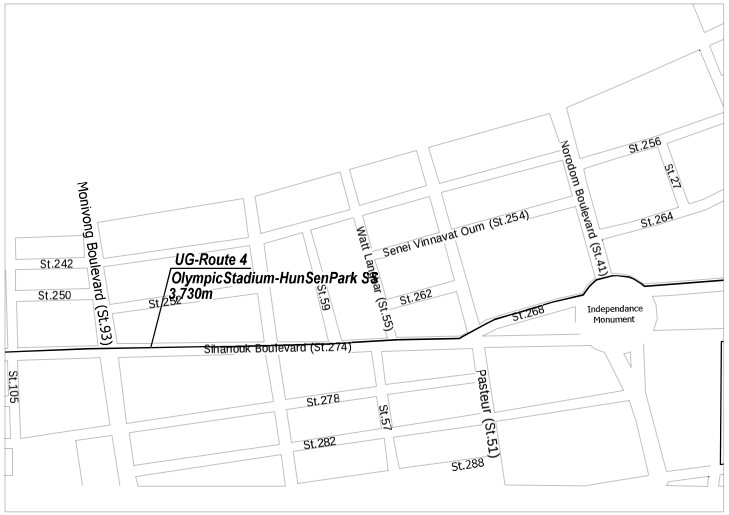
DRAWING No.

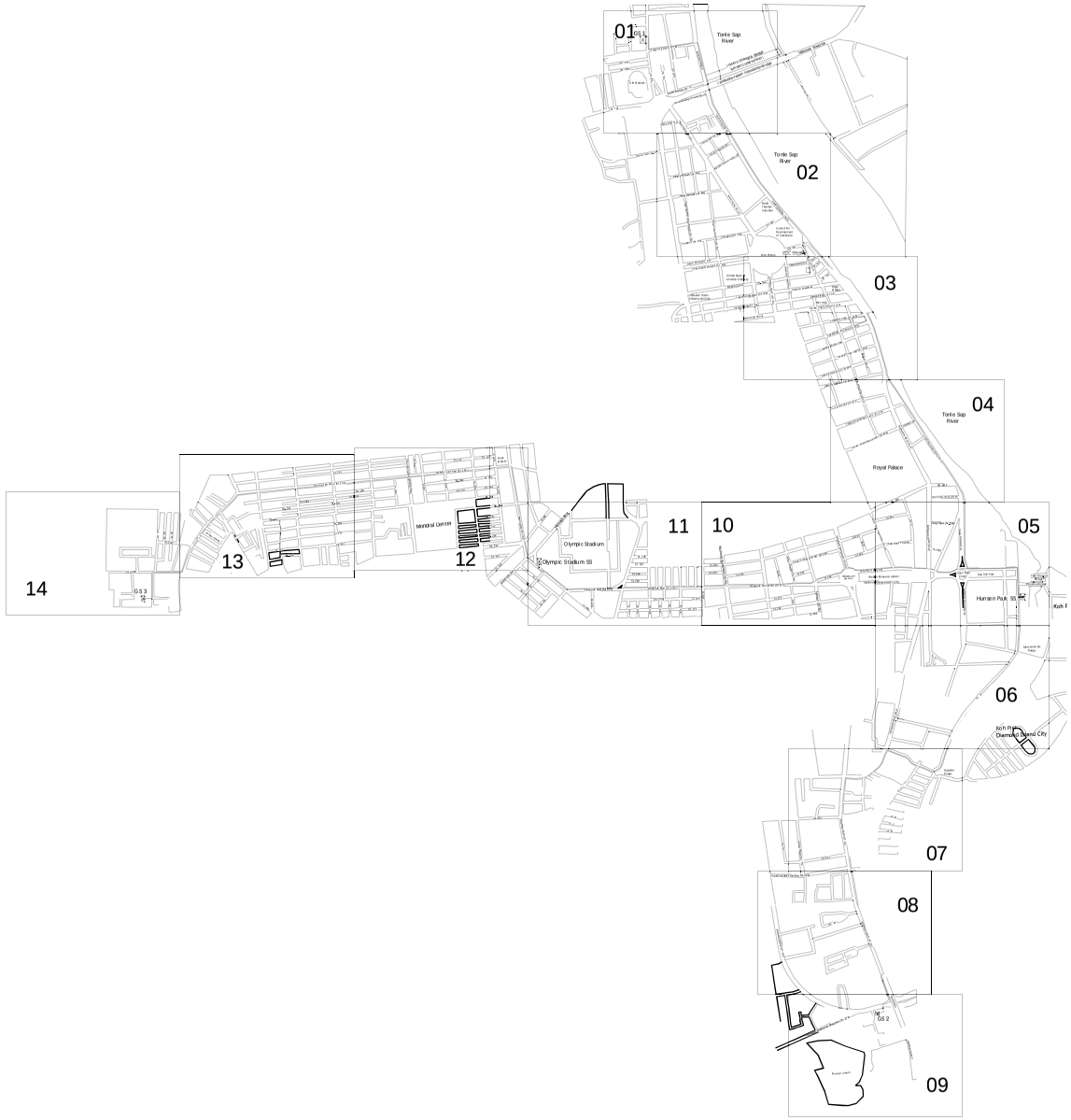
09

SHEET No.

9/14

REV.





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DRAWING No.

10

SHEET No.

10/14

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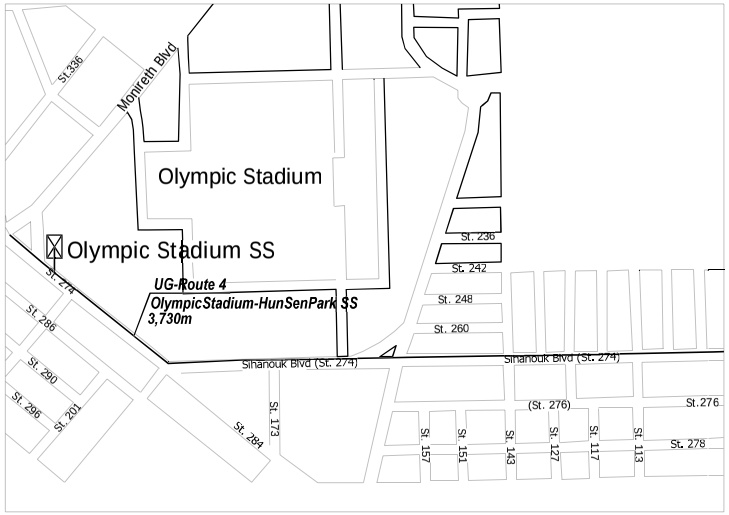

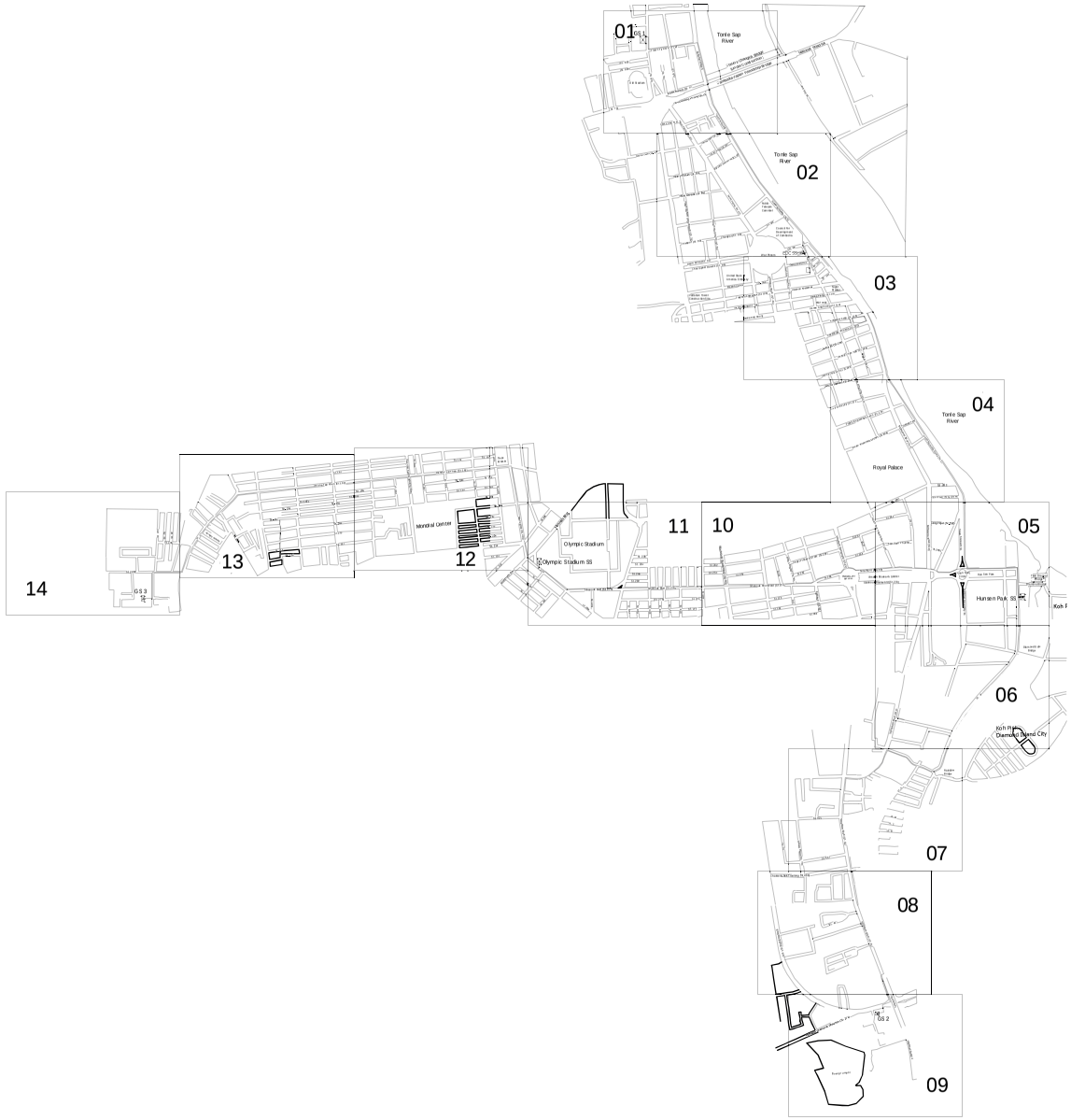

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DRAWING No.

11

SHEET No.

11/14

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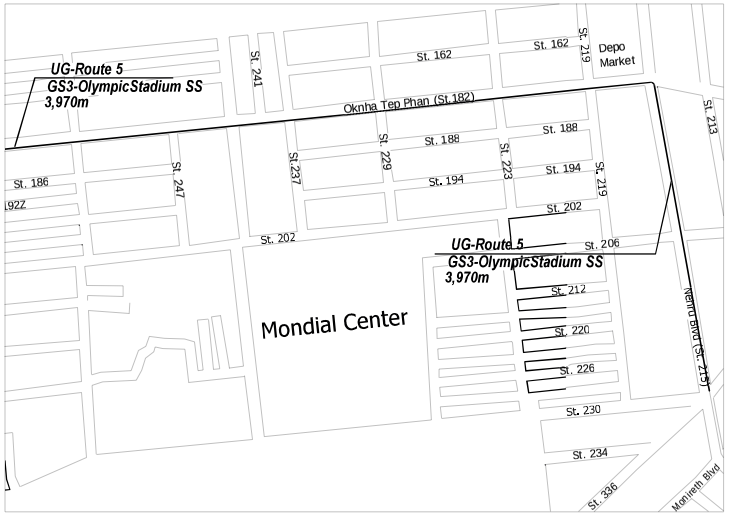

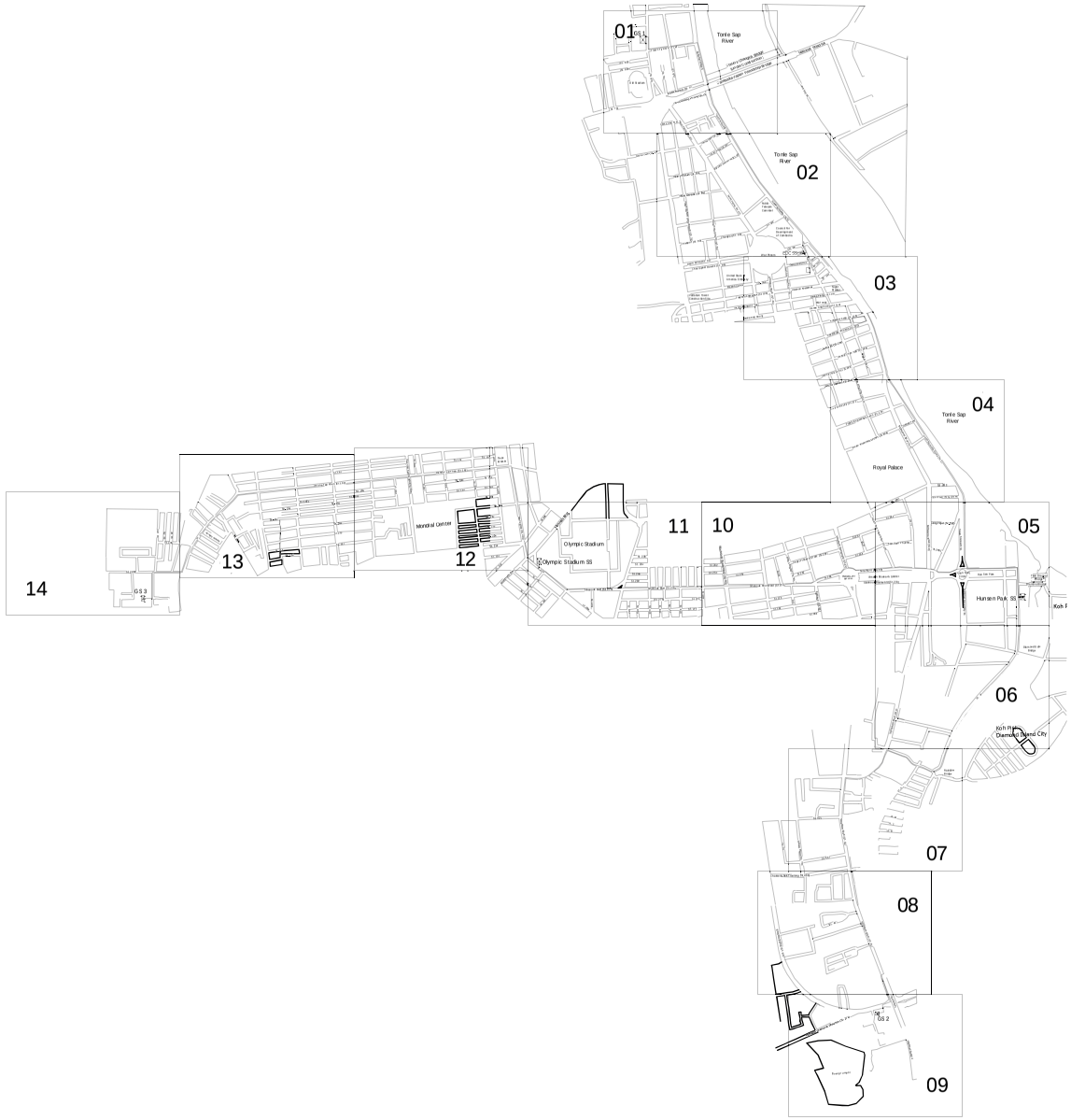

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DRAWING No.

12

SHEET No.

12/14

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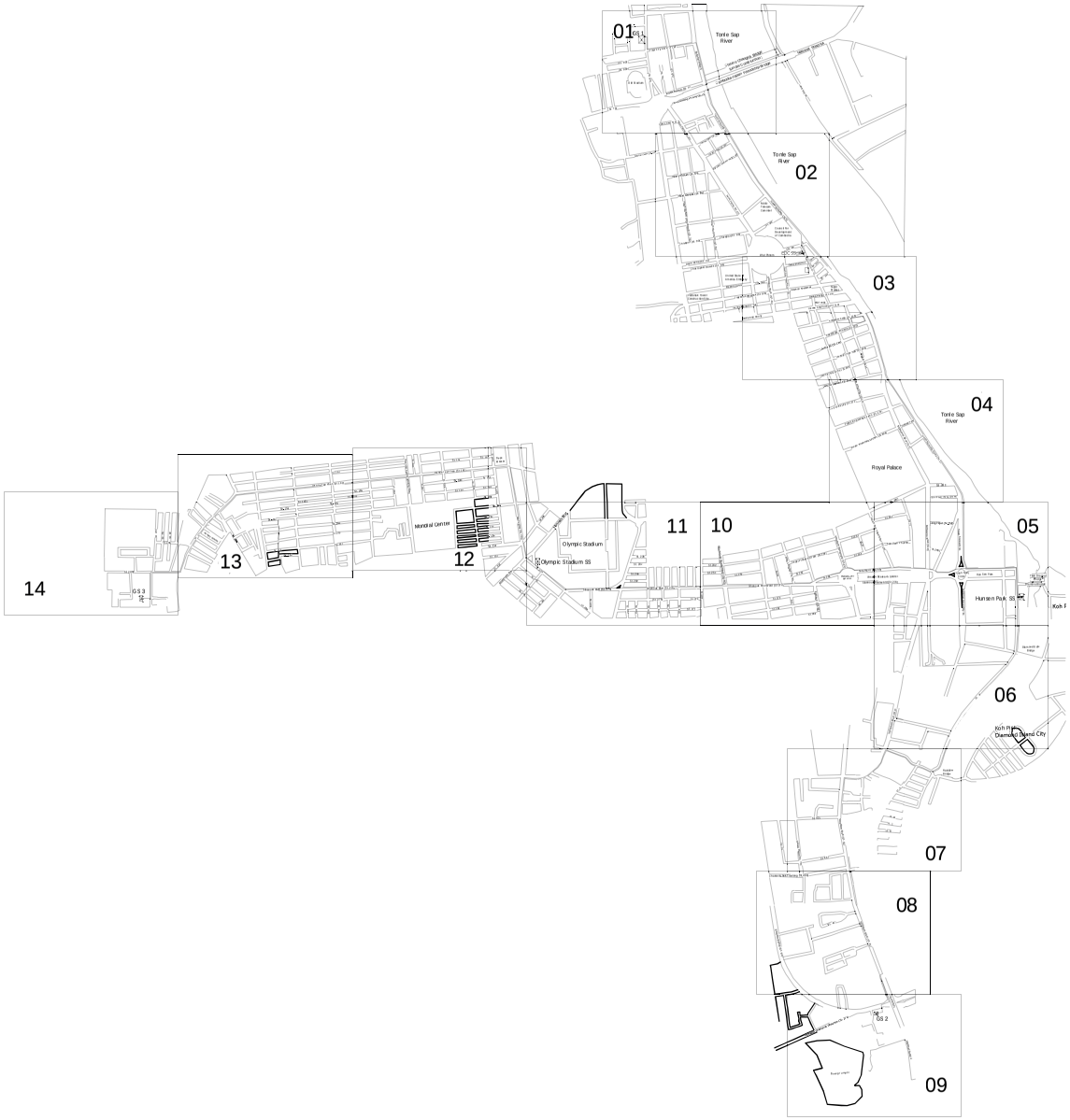

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EDC SUBSTATION

DRAWING No.

13

SHEET No.

13/14

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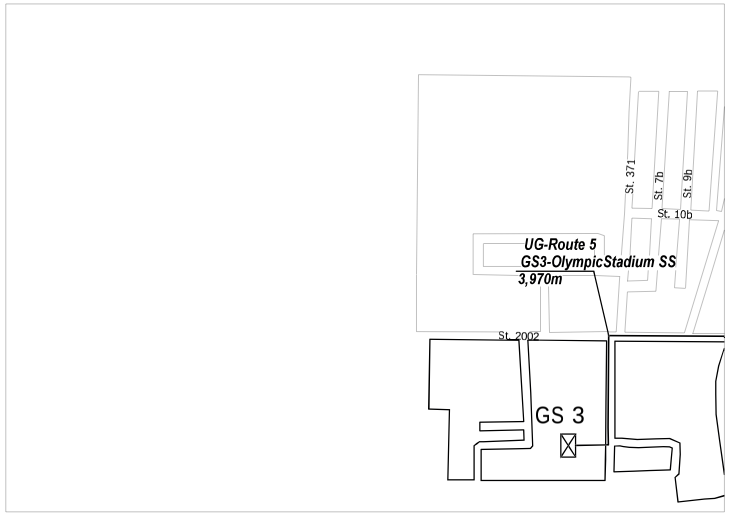

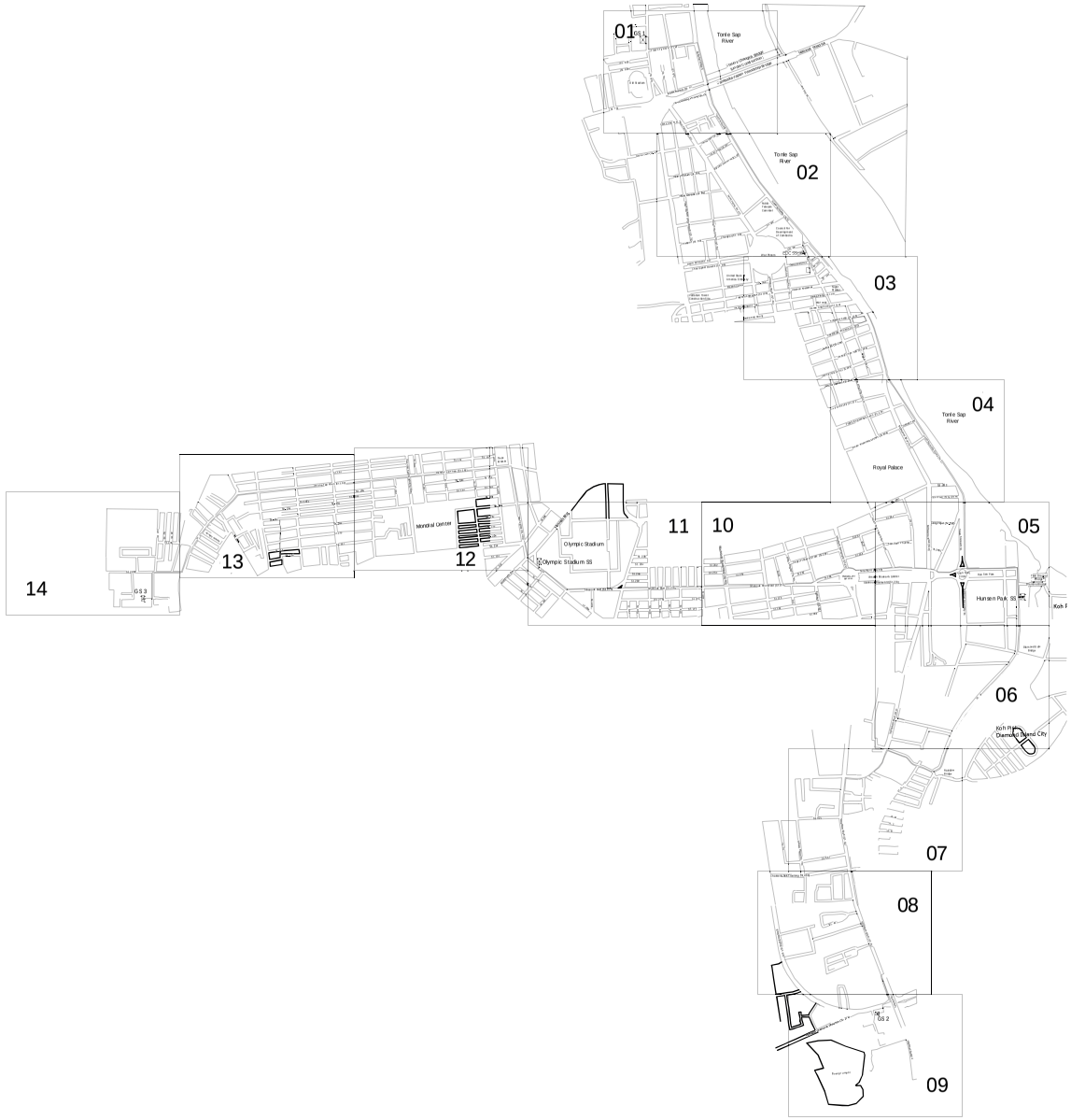

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DRAWING No.

14

SHEET No.

14/14

REV.

Appendix-5.8-1

Minutes of First Stakeholder Meeting

Date:	Tuesday, March 19th, 2013		
Time:	9:15 AM-12:00PM		
Location:	Conference Room of EDC		
Purpose:	1. Provided information about project. 2. Consultation about project.		
Attendees:	JICA Survey Team	2 persons	See attached list
	DPWT	2 persons	See attached list
	Khan 7 Makara	1 person	See attached list
	Khan Don Penh	1 person	See attached list
	EDC	12 persons	See attached list
	R&N Engineer Consultant	2 persons	See attached list
Outcome/ Comment/Qs and As:			
H.E Chan Sodavath	The meeting was chaired by H.E Chan Sodavath, Deputy Managing Director of EDC, and Mr. Chun Piseth, Deputy Director of Planning of EDC. After general introduction of survey teams by Mr. H.E Chan Sodavath, he explained the currently and future power system and the outline of this project		
Mr. Chou Kimtry, Deputy Director	Our City really needs power to supply. This project is priority project in order to develop our city. He hoped that this project will be done smoothly. However, I would like to share some ideas as the following: - Considering the open cut for transmission line along the selected roads. As a result, there will be some traffic jams along the road nowadays, especially at the busy time. Traffic is also important task that our team should consider. - Our road condition is small then when we cut the road side might affect so much to the traffic. Some road has only one lane. Some have 2 lances, 1 for each direction. - For main roads such as: Sisovath, Samdech Hun Sen; the walk side should be considered for the construction space to avoid traffic congestion on these roads. - Actually, I don't know about the dimension of the open cut for transmission line, thus, I don't know how to give the idea. But I believe that it will not be big as my drainage system. - Because of the traffic jam, I would like the project proponent to study along the walk side for this project. - Alternatively, I would you to pay attention with other underground facilities such as: cable, optic cable, other network…etc. We have these networks mostly underground in Phnom Penh. - Thus, JICA Survey Team has studied about these; it will help them so much to avoid any heavy problem from these.		

	- On the other hand, I saw some options for SS stadium, as first option it was sold, third and fourth option were invested by one company, named OCIC, but it might be free for the second option. So, please EDC and JICA Survey Team discuss with Ministry of Education for option 2.
Norng Kunra, Chief of Office	I would like to share idea with Environmental works such as; - (1). Affected people along the roads. As my experiences, I have worked on many firms with those people. Especially, the affection to their shops; their occupations and their properties as tiles in front of their houses. Thus, we have to clearly study for detail with people along these roads. We have to tell them that we will recover the same as before. - (2). For public properties, they are drainage system and trees in the walk side. The clear layout of project which eases us to share idea should provide us. If the project cannot choose side walk for open cut, I would like to suggest choosing the edge side of roads. But, it will affect to traffics because we need to cut road. Moreover, the cutting road is high cost, because our road type is AC. Other consequence is the recovering of these roads might not be the same as before. - I suggested that all Survey Team should work closely with local authority. Especially the specialist department should be good collaboration. - The distance from street trees to edge of walk side is 1.5 meters, thus the project proponent should study for this first to avoid cutting roads. The cost of AC type of road is US$ 300 per square meter. - There are two lines of drainage system under walk side; the walk side is 3 meters from edge road. So, walk side has space for this project. - For traffic, all roads are busy at the moment. When we contract on the road, it will affect to traffic. - As his experiences, all the cut places on roads will be depressed later on. So, please consider about the quality. - For affected people along the roads, they will not be compensated, but we have to negotiate with them including the purpose of development. We have to discuss and negotiate by explaining them the demand of Royal Government in this project. But we should recover their properties as bricks and concrete floor. We have to explain them about time will be used for construction, for example one day completed. - Also, for street shops, we have never given them the compensation. - Before implementing the project, EDC and contractor should ask local people for meeting in order to explain them about the brief layout of work and time will be needed in their home. This time we need their idea for solution. - Temporary detour should be prepared in front of their houses. - If we make it faster, suing will not be occurred. - A formal letter with EDC should be prepared, by attached clear layout of project after detail design, actual schedule and maps, to suggest Ministry of Industry Mine and Energy (MIME) in order to send the letter to ask the permission from City Hall.

	- Actually, after EDC contracted with JICA to implement the project, letter should start to send to City Hall for asking permission. - Due to my experiences, at least 1.5 or 2 months for asking the permission from City Hall after bidding. - After City Hall receiving this letter with attached files, they will call all relevant departments to have the meeting in order to discuss then decide.
Mr. Ouk Sakal, Deputy Director of Khan Doun Penh	On behalf of Doun Penh Khan, I would like to share some idea as the following: - Our organization is waiting the order from City Hall. - We will have staffs to participate for field works in order to explain people along the road in my district. - During explaining to people, we have to know about the time for construction, we want the Project Proponent to carry out work at night time avoid any disturbance to their occupation.
Mr. Ngoun Bunna, Deputy Director of Administration, Khan 7 Makara	On behalf of 7 Makara Khan, I would like to share some idea as the following: - We will prepare our staffs to participate with this project. - I agreed with the ideas raised above, but I would like to add some. - Our district will involve disclosing the information to all people in our district. - What will we do, how long will we construct per night? We have to know these in order to explain them easily to participate with us. - Time to cut electricity should be announced because people will prepare themselves when it is cut. - Anyway, after EDC send the letter for asking the permission from City Hall. City Hall will call all relevant departments to meet, including our Khan/district, to discuss for detail about this matter. - The ideas from local authorities as our Khan/district are important to City Hall, so, they will call us to meet for this. - All options of substations in Olympic Stadium are in our Khan/district. Frankly speaking, all these options belonged to Ministry of Education, but some has been invested by other investors such as: Koh Pich. However, it depends on the negotiation between Royal Government and Ministry of Education or investors. - Now, we are looking for solution to drain water, especially when it rains; then ponds around stadium are filled for other construction.

List of Participants

#	Full Name	Position	Institute
1	Chou Kimtry	Deputy Director	DPWT
2	Norng Kunra	Chief of Office	DPWT
3	Ouk Sakal	Deputy Director of Khan Doun Penh	Doun Penh
4	Ngoun Bunna	Deputy Director of Administration	Khan 7 Makara
5	H.E Chan Sodavath	Deputy Managing Director	EDC
6	Mr. Chun Piseth	Deputy Director of Planning	EDC
7	Chea Sam Ol	Director of Technical Office	EDC
8	Nou Sokhon	Director of T.D	EDC
9	Din Sakal	EDC/SEPRO	EDC
10	Chhi Man	EDC/PM 01	EDC
11	Kong Puthy	EDC/PM 02	EDC
12	Mao Visal	Chief of Environment Office	EDC
13	Sambath Chariry	Environmental Officer	EDC
14	Bin Sopheakda	Environmental Officer	EDC
15	Por Manith	Procurement Project Officer	EDC
16	Prum Channareth	Technical Officer	EDC
17	Tomoe TAKEDA	Environmental Consultant	JICA Survey Team
18	Nobone SEKI	Team Leader	JICA Survey Team
19	Sophon RATH	R&N Consultant	R&N
20	Sour Chheang You	Environmentalist	R&N Consultant

Appendix-5.8-2

Minutes of Second Stakeholder Meeting

Date:	Thursday, May 30th, 2013		
Time:	3:00PM-4:10PM		
Location:	Conference Room of EDC, Building A		
Purpose:	1. Provided information about project and result of IEE for Transmission Line 115 kV; 2. Consultation about project with stakeholders in project area.		
Attendees:	EIA office, Ministry of Environment (MOE)	2 persons	See attached list
	Phnom Penh City Hall	1 person	See attached list
	Department of Land Management, Urban Planning and Construction, Phnom Penh	2 persons	See attached list
	7 Makara Khan	1 person	See attached list
	Russey Keo Khan	1 person	See attached list
	Saen Sok Khan	1 person	See attached list
	Mean Chey Khan	1 person	See attached list
	Chamkar Mon Khan	1 person	See attached list
	Doun Penh Khan	1 person	See attached list
	Tuol Kouk Khan	1 person	See attached list
	EDC	7 persons	See attached list
	JICA Volunteer to EDC Distribution Department	1person	See attached list
	JICA Survey Team	2 persons	See attached list
	R&N Engineer Consultant	2 persons	See attached list
Outcome/ Comment/Qs and As:			
PhD. Chulasa Praing	The meeting was chaired by PhD. Chulasa Praing, Director of Planning Department, EDC. - Today, we have two presentation, technical work and environmental result. But, I would like to give some information related to project before starting the presentation. - So far, we have faced two problems in our electrical work. First of all, there is no source of electricity; and the second it is its facilities to transmit power to City then distribute to households. However, we will have electricity from hydropower and coal power plant at		

	the end of 2013 and 2014. It will help us for demand of power in City and other area. Thus, more substations and its facilities are also required for our work. - In the future soon, we have power then supply to substations surrounding Phnom Penh; however, we don't have the facility to transmit this power to supply in the center of Phnom Penh City. As a result, new buildings are constructing, they needs much power. 22kV distribution system cannot supply in future. Because 22kV distribution system is able to supply power about 8 MW. Thus, we need substations in the central city and high-voltage transmission line 115kV in order to link power from substations surrounding Phnom Penh. This system will be able to supply power 200 or 300 MW to center of Phnom Penh City. - Now, we have power over 400 MPA in central city, but it is not enough. - Due to the rapid development in Phnom Penh City, we also need another partner, Chinese company, to construct the substation in Hun Sen Park in order to distribute power to Royal Palace, NAGA, and Koh Pich Center. - Our Prime Minister, Hun Sen, provided land 5,000 m2 in Hun Sen Park for substation construction and office. We will have team in this office for intervention whenever it faces problem, because here there are building of national assembly, foreign affairs and international cooperation, Royal Palace… so we need another office here. - For location in Olympic Stadium, we are discussing with Ministry of Education, Youth and Sports in order to suggest for small area with 2000 m2 for substation construction. But, it is no problem for location in EDC head office. Then, in Toul Kok area we will buy land next to railway station for substation. For substation in Chroy Changvay, we think that it is easy. - From my point of view, this project will not affect so much to environment, because it is the underground project. But it will have some during construction phase. Due to these affections, we invited all of relevant departments and organizations to participate in order to find out the mitigation measurement. PhD. Chulasa Praing suggested Mr. Seki to show participants about the model picture of substation building from abroad. After general introduction of project type and its purpose, PhD. Chulasa Praing, he declared to open the meeting then let JICA survey team to give the presentation.
Mr. Sam Muykheang, Representative of Mean Chey Khan	I welcome this project, but I have one question to EDC: which road will project use for transmission route from GS2 to substation in Hun Sen park? Because it is in my Khan. Last, how will project construct across the road? **Replied by**: - EDC: The transmission route will go along the Norodom Blv., but it will turn to river side at the point next to Embassy of Japan in order to reduce the impact. - Mr. SEKI: we will cut road lane by lane during construction to avoid

	traffic jam in case it goes across the road.
Nob Navy, Deputy director of EIA office, MOE	I have two questions: What is DCC? and What is CEMP? **Replied by**: - Mr. Mao Visal: DCC is Design and Construct Contractor. It means that contractor for construction needs to prepare Construction Environmental Management Plan (CEMP) according to EMP then submit to EDC.
Cheam Phanin, Vice chief of Urban Planning Office, City Hall	Our office responds for checking the proposed documents which send to City Hall for permission to cut road or other public facilities in Phnom Penh. In case for this project, I have never got the details drawing or accurate roads for project so far. So, he suggested EDC to provide his office what the project needs for details. However, I did not know about the procedure of substation in Hun Sen park because there is another officer responded for this. Sure, my office responded for this. **Replied by**: EDC suggested office of Urban Planning Office to fasten procedure work of Hun Sen Park substation because EDC needs to finish then start construction.
Lim Dina, Vice Governor of Doun Penh Khan	I think that there is no any affection to shops along the street, because the project will construct on the side of road. These shops are on the sidewalk. Thus, it has no problem. Due to Mr. SEKI, the construction will be done step by step, finishing one block just continuing. Thus it is not long time; then affection will be short. People will have no complaint. Last, I would like to support this.
Sun Sethy, Representative of Chamkar Mon Khan	The trench excavation width is smaller than drainage system. So, I think that the impact is also small. In addition, it is good way that JICA has planned to finish job in block by block in one day. I think that is no many impact, but it might also have some problems in construction phase, especially traffic and noise.
PhD. Chulasa Praing	Finally, I suggested all of participants from all organizations and Khans to cooperate with survey team for next step (detailed design) in purpose of development in our City. I would like to thank and close the meeting.

List of Participants

No.	Name	Position and Organization
1	Lim Dina	Vice Governor of Doun Penh Khan
2	Sum Savuy	Representative of Russey Keo Khan
3	Chhay Savuth	Representative of Saen Sok Khan
4	Nob Vanna	Representative of 7 Makara Khan
5	Sam Muykheang	Representative of Mean Chey Khan
6	Nob Navy	Deputy director of EIA office, MOE
7	So Kunthy	Officer of EIA, MOE
8	Ith Samneth	Deputy director of administration office, Tuol Kouk Khan
9	Plong Visyapolkun	Deputy director of Technical Work office, EDC
10	In Nimol	Deputy director of Electricity Distribution office, EDC
11	Sophon RATH	R &N, Local consultant
12	Chhum Ma	EDC
13	Van Sehakiri	EDC
14	Sun Sethy	Representative of Chamkar Mon Khan
15	Cheam Phanin	Vice chief of Urban Planning Office, Phnom Penh City Hall
16	Dy Sanith	Deputy director of Land Management, Urban Planning and Construction Department, Phnom Penh
17	Ping Ratanak	Office Director of Land Management, Urban Planning and Construction Department
18	Mao Visal	Director office of Social, Environmental, and Public Relation, EDC
19	Nobora SEKI	JICA Survey Team
20	Hiroyuki Sato	JICA Volunteer to EDC Distribution Department
21	Tomoe Takeda	JICA Survey Team
22	Sambat Chakrya	Officer of Social, Environmental, and Public Relation, EDC
23	Sour Chheang You	R &N, Local consultant
	PhD. Chulasa Praing	Director of Planning Department, EDC

Appendix 5.9

Environmental Check List

Category	Environmental Item	Main Check Items	Yes: Y No: N	Confirmation of Environmental Considerations (Reasons, Mitigation Measures)
1 Permits and Explanation	(1) EIA and Environmental Permits	(a) Have EIA reports been already prepared in official process? (b) Have EIA reports been approved by authorities of the host country's government? (c) Have EIA reports been unconditionally approved? If conditions are imposed on the approval of EIA reports, are the conditions satisfied? (d) In addition to the above approvals, have other required environmental permits been obtained from the appropriate regulatory authorities of the host country's government?	(a) N (b) N/A(Not applicable) (c) N/A (d) Y	(a) Project of Transmission Line 115 kV needs only IEIA due to the new Additional PRAKAS, Ministry of Environment, on December 28, 2012. (b) No EIA is required. The project needs only IEIA. (c) ditto (d) An approval of IEIA report is required for this project. The summary of the draft IEIA was shared at the 2nd Stakeholder meeting. The IEIA is supposed to be submitted to MoE by EDC.
	(2) Explanation to the Local Stakeholders	(a) Have contents of the project and the potential impacts been adequately explained to the Local stakeholders based on appropriate procedures, including information disclosure? Is understanding obtained from the Local stakeholders? (b) Have the comment from the stakeholders (such as local residents) been reflected to the project design?	(a) Y (b) Y	(a) EDC and JICA Survey Team have already explained to the stakeholders in two stakeholder meetings(SHM). Stakeholders gave some advice and positive comments to the project implementation. (b) The comments from stakeholders at SHM was considered and reflected to the report.
	(3) Examination of Alternatives	(a) Have alternative plans of the project been examined with social and environmental considerations?	(a)Y	(a) The total four project plans were prepared and the optimum one was proposed after the consideration of their impact on the neighborhood residents and surrounding environment based on the overall information.
2 Pollution Control	(1) Water Quality	(a) Is there any possibility that soil runoff from the bare lands resulting from earthmoving activities, such as cutting and filling will cause water quality degradation in downstream water areas? If the water quality degradation is anticipated, are adequate measures considered?	(a) Y	(a) The suspended solids and turbidity downstream of construction might be increased. However the construction activities will be carried out only in the dry season and the water from the construction site will not be discharged to the public water body or river. Thus the impact is limited. The mitigation measures will be taken such as trapped filter around the construction site near the water body etc. And the contractor will cooperate with waste collection service to collect the extra soil if it remained after refilling at the construction site.
3 Natural Environment	(1) Protected Areas	(a) Is the project site located in protected areas designated by the country's laws or international treaties and conventions? Is there a possibility that the project will affect the protected areas?	(a) N	(a) Not applicable since the project location is not in the protected area and it is in the urban area.

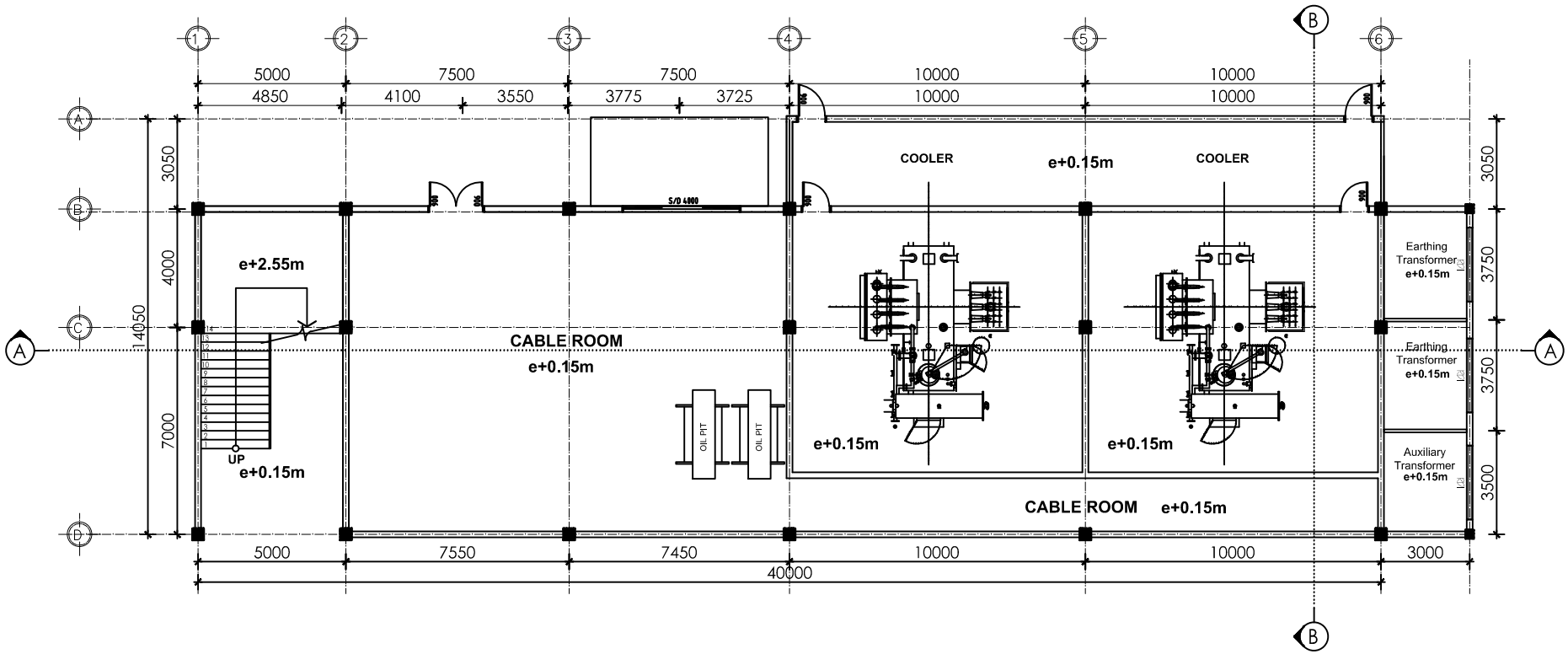
Category	Environmental Item	Main Check Items	Yes: Y No: N	Confirmation of Environmental Considerations (Reasons, Mitigation Measures)
	(2) Ecosystem	(a) Does the project site encompass primeval forests, tropical rain forests, ecologically valuable habitats (e.g., coral reefs, mangroves, or tidal flats)? (b) Does the project site encompass the protected habitats of endangered species designated by the country's laws or international treaties and conventions? (c) If significant ecological impacts are anticipated, are adequate protection measures taken to reduce the impacts on the ecosystem? (d) Are adequate measures taken to prevent disruption of migration routes and habitat fragmentation of wildlife and livestock? (e) Is there any possibility that the project will cause the negative impacts, such as destruction of forest, poaching, desertification, reduction in wetland areas, and disturbance of ecosystem due to introduction of exotic (non-native invasive) species and pests? Are adequate measures for preventing such impacts considered? (f) In cases where the project site is located in undeveloped areas, is there any possibility that the new development will result in extensive loss of natural environments?	(a) N (b) N (c) N (d) N (e) N (f) N	(a)-(f) Not applicable since the project location is located in the urban developed area.
3 Natural Environment	(3) Topography and Geology	(a) Is there any soft ground on the route of power transmission and distribution lines that may cause slope failures or landslides? Are adequate measures considered to prevent slope failures or landslides, where needed? (b) Is there any possibility that civil works, such as cutting and filling will cause slope failures or landslides? Are adequate measures considered to prevent slope failures or landslides? (c) Is there a possibility that soil runoff will result from cut and fill areas, waste soil disposal sites, and borrow sites? Are adequate measures taken to prevent soil runoff?	(a) N (b) N (c) N	(a) The open cut will be done along the existing road sides and the height of open cut is not deep. Thus land slide will not be occurred. (b) The depth in the project side is only around 1.4 meter and its width is around 1 meter, then it will immediately be refilled after fishing work, thus slope failures or landslides will not be occurred. (c) The activities of the project implementation will not affect to soil runoff because the project will start in only dry season. In addition, for open cutting and refilling will be completed only one day or some days for one zone, so it will not cause the soil runoff which affected to the topography and geology.

Category	Environmental Item	Main Check Items	Yes: Y No: N	Confirmation of Environmental Considerations (Reasons, Mitigation Measures)
4 Social Environment	(1) Resettlement	(a) Is involuntary resettlement caused by project implementation? If involuntary resettlement is caused, are efforts made to minimize the impacts caused by the resettlement? (b) Is adequate explanation on compensation and resettlement assistance given to affected people prior to resettlement? (c) Is the resettlement plan, including compensation with full replacement costs, restoration of livelihoods and living standards developed based on socioeconomic studies on resettlement? (d) Are the compensations going to be paid prior to the resettlement? (e) Are the compensation policies prepared in document? (f) Does the resettlement plan pay particular attention to vulnerable groups or people, including women, children, the elderly, people below the poverty line, ethnic minorities, and indigenous peoples? (g) Are agreements with the affected people obtained prior to resettlement? (h) Is the organizational framework established to properly implement resettlement? Are the capacity and budget secured to implement the plan? (i) Are any plans developed to monitor the impacts of resettlement? (j) Is the grievance redress mechanism established?	(a) N (b) N/A(Not Applicable) (c) N/A (d) N/A (e) N/A (f) N/A (g) N/A (h) N/A (i) N/A (j) N/A	(a) Involuntary resettlement is not anticipated since the project location is along the existing public roads and public or EDC's site. (b)-(j) Not applicable
	(2) Living and Livelihood	(a) Is there a possibility that the project will adversely affect the living conditions of inhabitants? Are adequate measures considered to reduce the impacts, if necessary? (b) Is there a possibility that diseases, including infectious diseases, such as HIV will be brought due to immigration of workers associated with the project? Are adequate considerations given to public health, if necessary? (c) Is there any possibility that installation of structures, such as power line towers will cause a radio interference? If any significant radio interference is anticipated, are adequate measures considered? (d) Are the compensations for transmission wires given in accordance with the domestic law?	(a)Y (b)Y (c)N (d)N	(a) The temporary and small impact on the surrounding traffic situation is anticipated. However, the impact is limited. The construction schedule and time period will be considered and shared with the neighborhood. The traffic order or facilitator will be provided at crossing points of busy road in period of the project construction. (b) Health education such as HIV/AIDS will be provided to the project workers by EDC and contractor. Firstly, EDC and contractor will aid training about diseases including HIV/AIDS to project staff etc to avoid the spread of disease to between people. (c)-(d) Not applicable since the transmission conductor/wire and its facilities will be installed underground along the existing roads.

Category	Environmental Item	Main Check Items	Yes: Y No: N	Confirmation of Environmental Considerations (Reasons, Mitigation Measures)
	(3) Heritage	(a) Is there a possibility that the project will damage the local archeological, historical, cultural, and religious heritage? Are adequate measures considered to protect these sites in accordance with the country's laws?	(a) N	(a) Not applicable since there is any local archeological, historical, cultural, and religious heritage affected by project.
	(4) Landscape	(a) Is there a possibility that the project will adversely affect the local landscape? Are necessary measures taken?	(a) Y	(a) At the construction phase, The construction site near the tourist spot might affect to the surrounding landscape, but the impact is minor and temporally. At the operation phase, if the substation building has any specific or unpleasant features, the adverse impact might be made. The design of the building will be coordinated with the surrounding landscape and buildings.
	(5) Ethnic Minorities and Indigenous Peoples	(a) Are considerations given to reduce impacts on the culture and lifestyle of ethnic minorities and indigenous peoples? (b) Are all of the rights of ethnic minorities and indigenous peoples in relation to land and resources respected?	(a) N (b) N	(a)-(b) Not applicable since here is no any lifestyle of ethnic minorities, indigenous peoples and their right affected by project.
4 Social Environment	(6) Working Conditions	(a) Is the project proponent not violating any laws and ordinances associated with the working conditions of the country which the project proponent should observe in the project? (b) Are tangible safety considerations in place for individuals involved in the project, such as the installation of safety equipment which prevents industrial accidents, and management of hazardous materials? (c) Are intangible measures being planned and implemented for individuals involved in the project, such as the establishment of a safety and health program, and safety training (including traffic safety and public health) for workers etc.? (d) Are appropriate measures taken to ensure that security guards involved in the project not to violate safety of other individuals involved, or local residents?	(a) Y (b) Y (c) Y (d) Y	(a) The EDC and constructor will implement the project in compliance with the Labor Law stipulated by RGC. (b) The contractor will follow all safety working standards by providing safety tool and equipment such as boot, gloves, eye-glasses, and helmet. And they will conduct periodical patrol of working conditions. (c) Implementation of the safety education and training for labors about sanitation, security and rules/discipline and daily activity are proposed to implement construction woks in safe manner. (d) As mentioned above, not only security guards but also all construction labors will be trained by education program for social consideration. In addition, periodical patrol of workers will be implemented to avoid local conflict.

Category	Environmental Item	Main Check Items	Yes: Y No: N	Confirmation of Environmental Considerations (Reasons, Mitigation Measures)
5 Others	(1) Impacts during Construction	(a) Are adequate measures considered to reduce impacts during construction (e.g., noise, vibrations, turbid water, dust, exhaust gases, and wastes)? (b) If construction activities adversely affect the natural environment (ecosystem), are adequate measures considered to reduce impacts? (c) If construction activities adversely affect the social environment, are adequate measures considered to reduce impacts?	(a)Y (b)N (c)Y	(a) Following measures are proposed to reduce impacts by the construction (i) Noise; to use noise-reducing machineries, (ii) Dust and emission; to use low-emission vehicle and equipment, dust prevention such as covering of solid or sprinkling of water (iii) Turbid water; proper and quick treatment of suspended solids or soil, (iv) Waste; minimization of the waste and proper treatment. (b) Not applicable since the transmission conductor/wire, substations and their facilities do not have the factor which adversely affects the natural environment. (c) Most of the construction works are small scale and therefore impact of construction is limited. In addition, following measures are proposed to reduce any negative impacts; (i) to disseminate information on the limitation period of construction works to commune council and other, (ii) to publicize the construction schedule to the neighborhood etc. (3) to provide a traffic order or facilitator at crossing points of busy road in period of the project construction.
	(2) Monitoring	(a) Does the proponent develop and implement monitoring program for the environmental items that are considered to have potential impacts? (b) What are the items, methods and frequencies of the monitoring program? (c) Does the proponent establish an adequate monitoring framework (organization, personnel, equipment, and adequate budget to sustain the monitoring framework)? (d) Are any regulatory requirements pertaining to the monitoring report system identified, such as the format and frequency of reports from the proponent to the regulatory authorities?	(a) Y (b) Y (c) Y (d) N	(a) Instrumental measurement and patrol checking at the construction site are proposed for the potential impact. (b) Air pollution, turbidity and noise monitoring by observation and instrumental measurement in the field monthly are proposed (c) Monitoring is proposed to be carried out by Design and Construct Contractor, supervised by Project Implementation Consultant under the responsibility of EDC. (d) At present, the format and the frequency of the report are not provided from regulatory authorities.
6 Note	Reference to Checklist of Other Sectors	(a) Where necessary, pertinent items described in the Road checklist should also be checked (e.g., projects including installation of electric transmission lines and/or electric distribution facilities).	(a) N	(a) Not applicable since the transmission conductor/wire and its facilities will be installed underground along the small part of existing roads.

Category	Environmental Item	Main Check Items	Yes: Y No: N	Confirmation of Environmental Considerations (Reasons, Mitigation Measures)
	Note on Using Environmental Checklist	(a) If necessary, the impacts to transboundary or global issues should be confirmed, (e.g., the project includes factors that may cause problems, such as transboundary waste treatment, acid rain, destruction of the ozone layer, or global warming).	(a) N	(a) Not applicable.



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CONSULTANT:

TEPCO, TEPSCO & NIPPON KOEI
in association with
R&N Engineering Consultants

PROJECT OWNER :

EDC

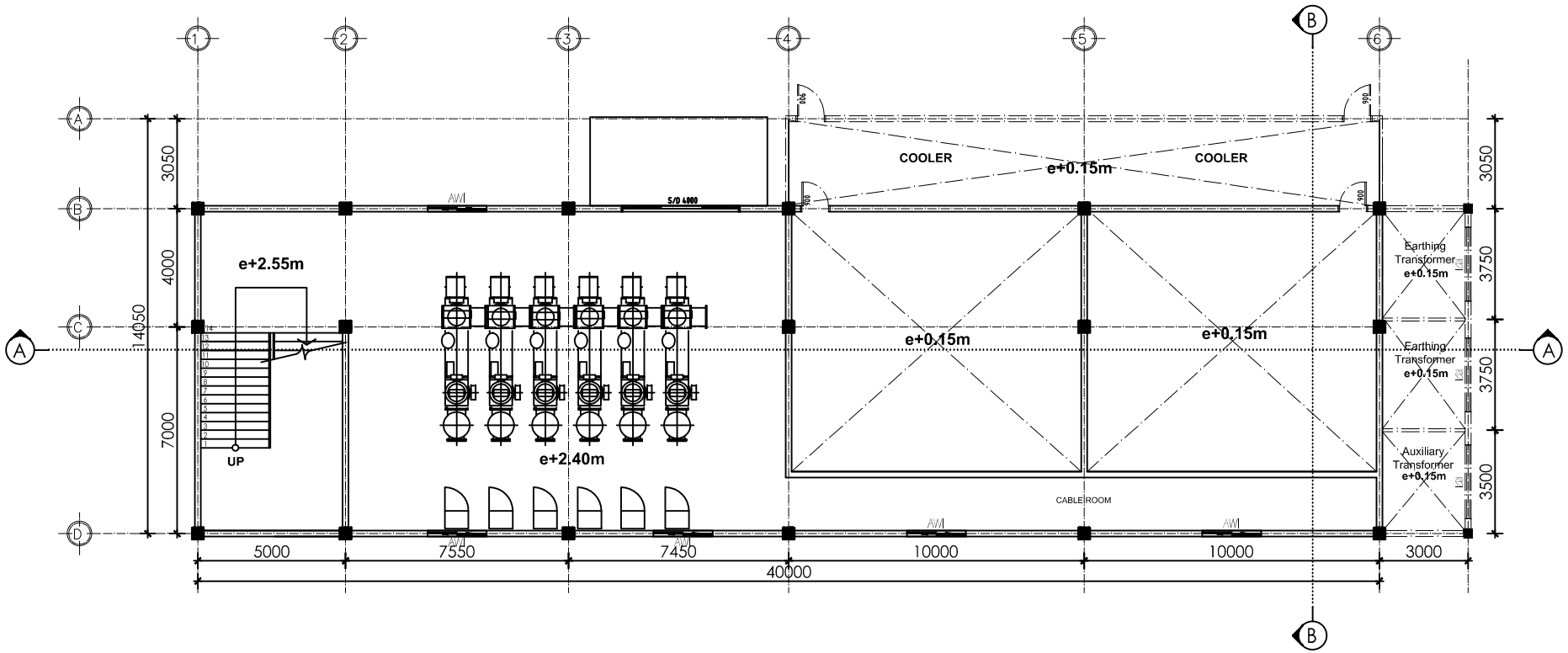
PROJECT NAME :

Preparatory Survey for Phnom Penh Transmission Line
and
Distribution System Construction Project
EDC SUBSTATION

DRAWING No.

SHEET No.

REV.



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EDC LOCATED

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CONSULTANT:

TEPCO, TEPSCO & NIPPON KOEI
in association with
R&N Engineering Consultants

PROJECT OWNER :

EDC

PROJECT NAME :

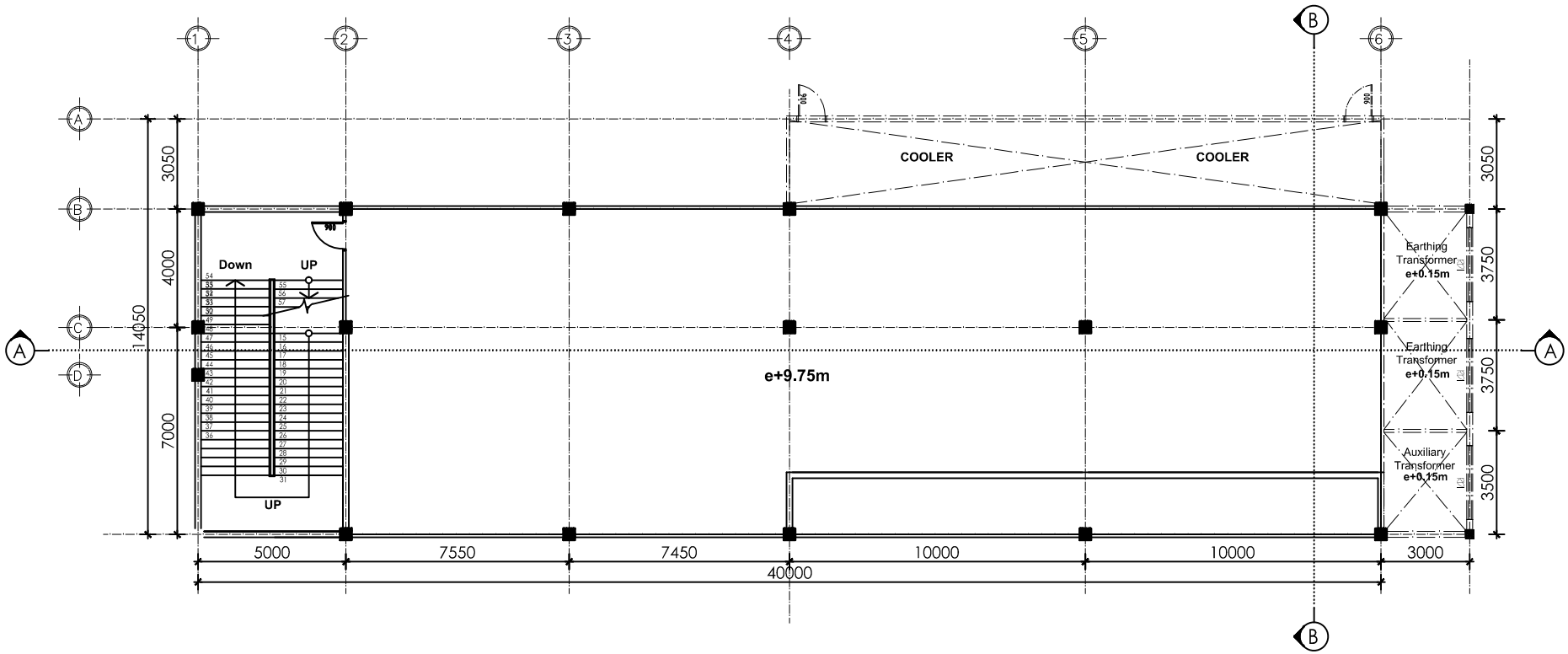
Preparatory Survey for Phnom Penh Transmission Line and Distribution System Construction Project

EDC SUBSTATION

DRAWING No.

SHEET No.

REV.



CABLE FLOOR
EDC LOCATED

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								SCALE :	1:100	

CONSULTANT:

TEPCO, TEPSCO & NIPPON KOEI
in association with
R&N Engineering Consultants

PROJECT OWNER :

EDC

PROJECT NAME :

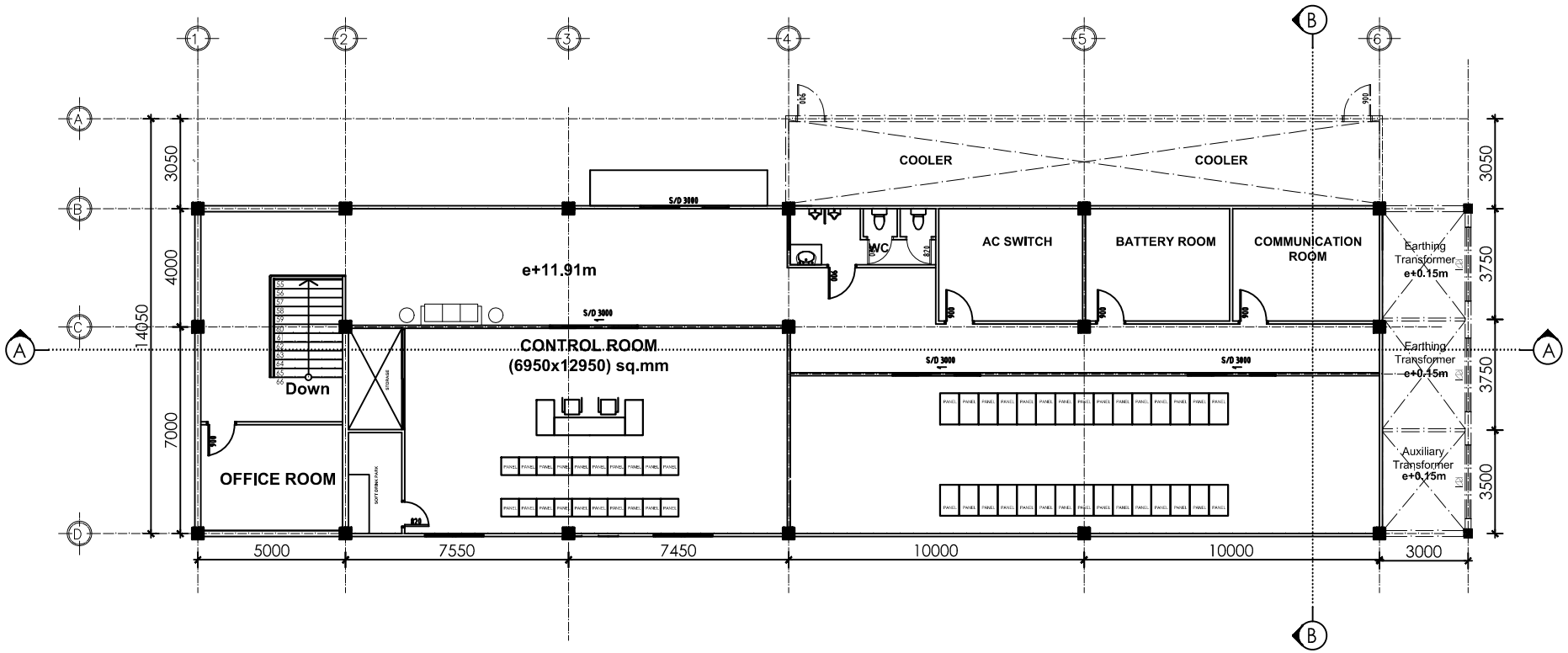
Preparatory Survey for Phnom Penh Transmission Line and Distribution System Construction Project

EDC SUBSTATION

DRAWING No.

SHEET No.

REV.



1st FLOOR
EDC LOCATED

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CONSULTANT:
TEPCO, TEPSCO & NIPPON KOEI
in association with
R&N Engineering Consultants

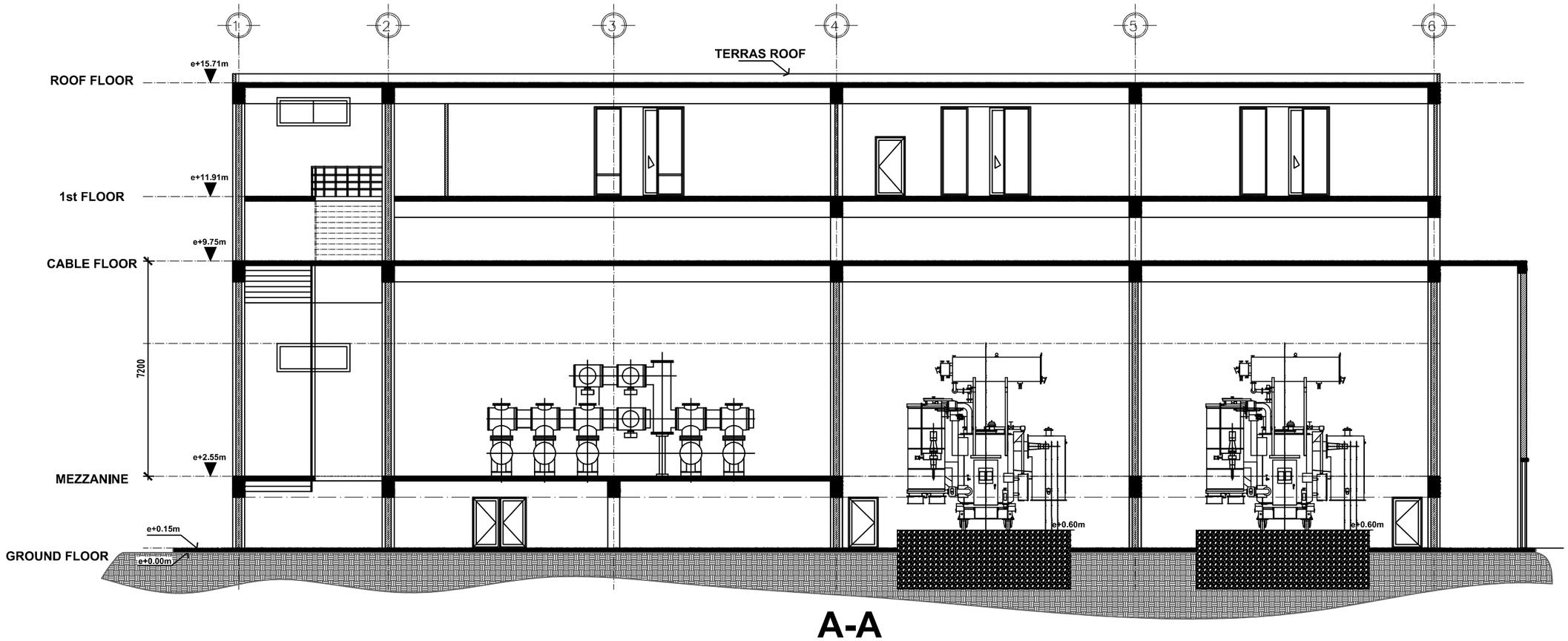
PROJECT OWNER :
EDC

PROJECT NAME :
Preparatory Survey for Phnom Penh Transmission Line and Distribution System Construction Project
EDC SUBSTATION

DRAWING No.

SHEET No.

REV.



A-A

REV	DESCRIPTION	DATE	DESIGN	DRAWN	CHECK	RECOM	APPROVE	ACTION	SIGNATURE	DATE
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PROJECT OWNER :

EDC

PROJECT NAME :

Preparatory Survey for Phnom Penh Transmission Line
and
Distribution System Construction Project
OLYMPIC SUBSTATION

DRAWING No.

SHEET No.

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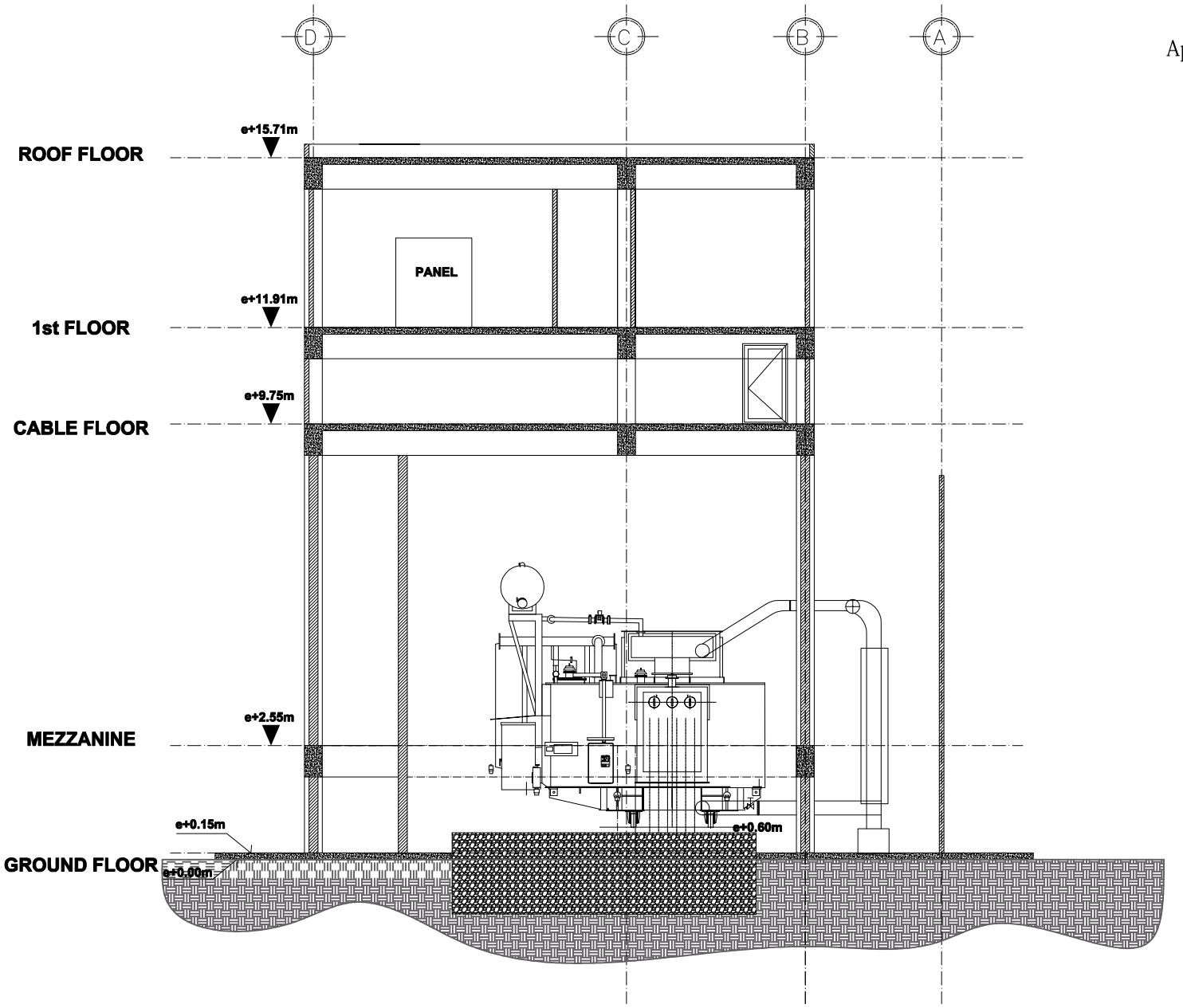
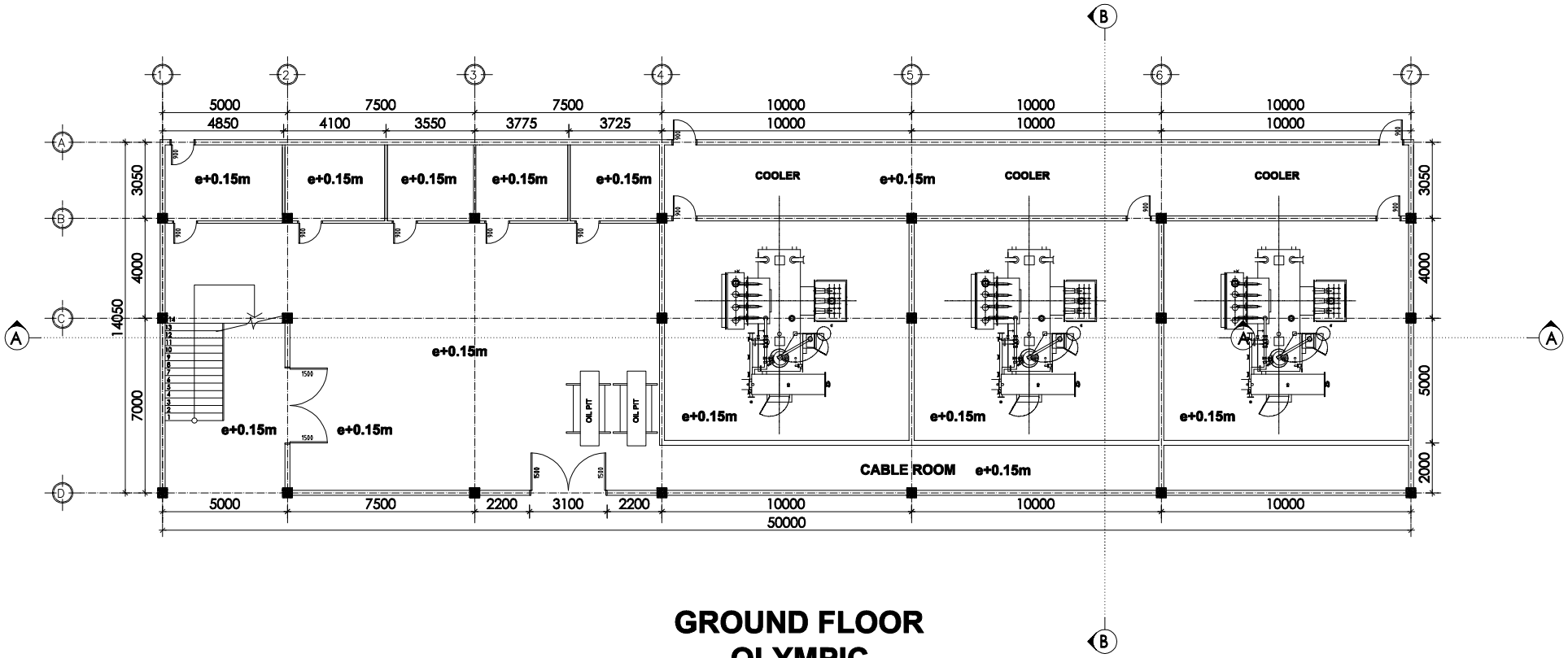
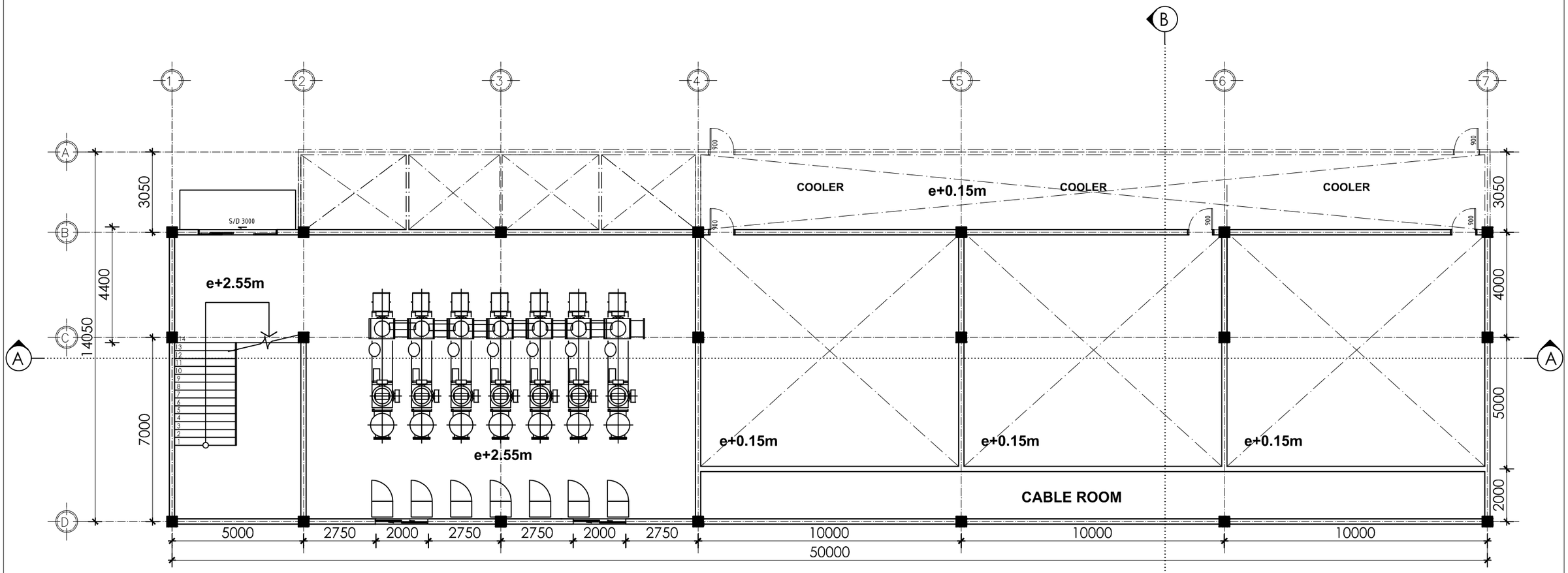

D
C
B
A
e+15.71m
ROOF FLOOR
PANEL
e+11.91m
1st FLOOR
e+9.75m
CABLE FLOOR
e+2.55m
MEZZANINE
e+0.15m
e+0.60m
GROUND FLOOR
e+0.00m

B-B

BACK VIEW



GROUND FLOOR
OLYMPIC



MEZZANINE FLOOR
OLYMPIC

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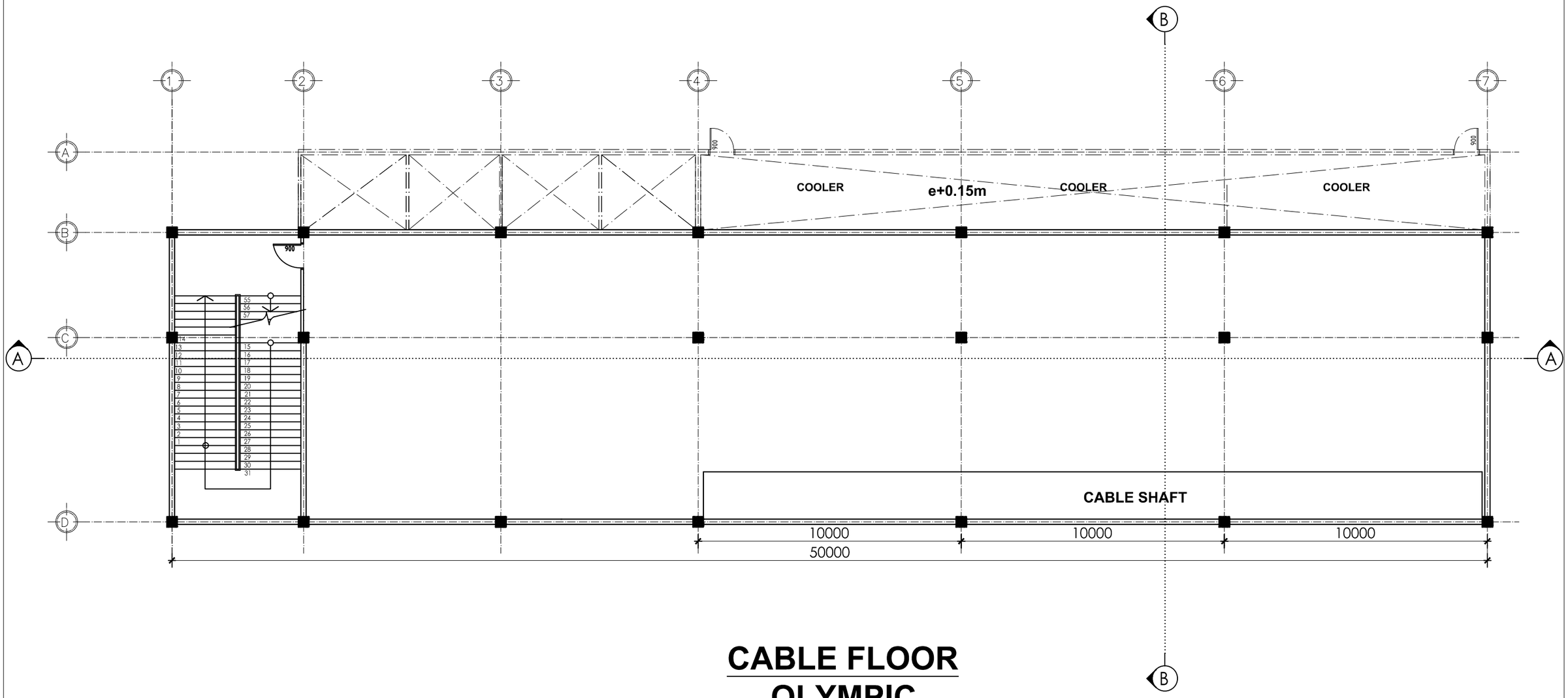
REV.



CABLE FLOOR
OLYMPIC

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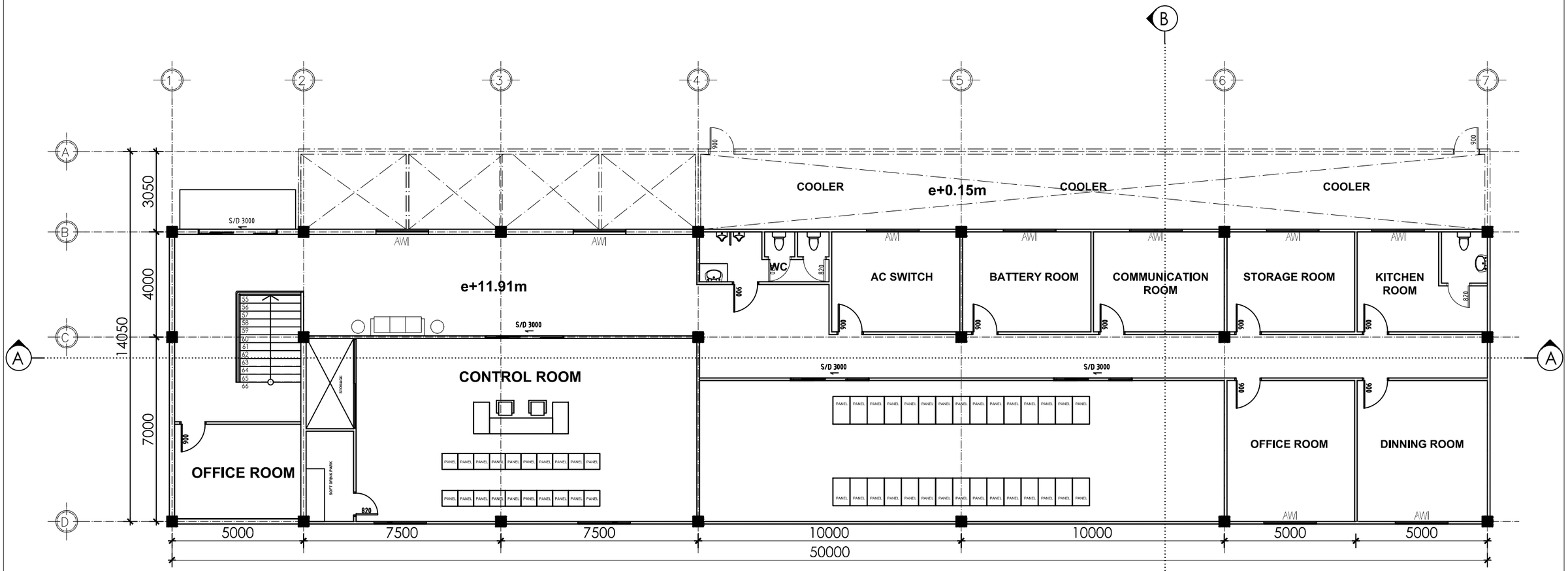

1st FLOOR
OLYMPIC

REV	DESCRIPTION	DATE	DESIGN	DRAWN	CHECK	RECOM	APPROVE	ACTION	SIGNATURE	DATE
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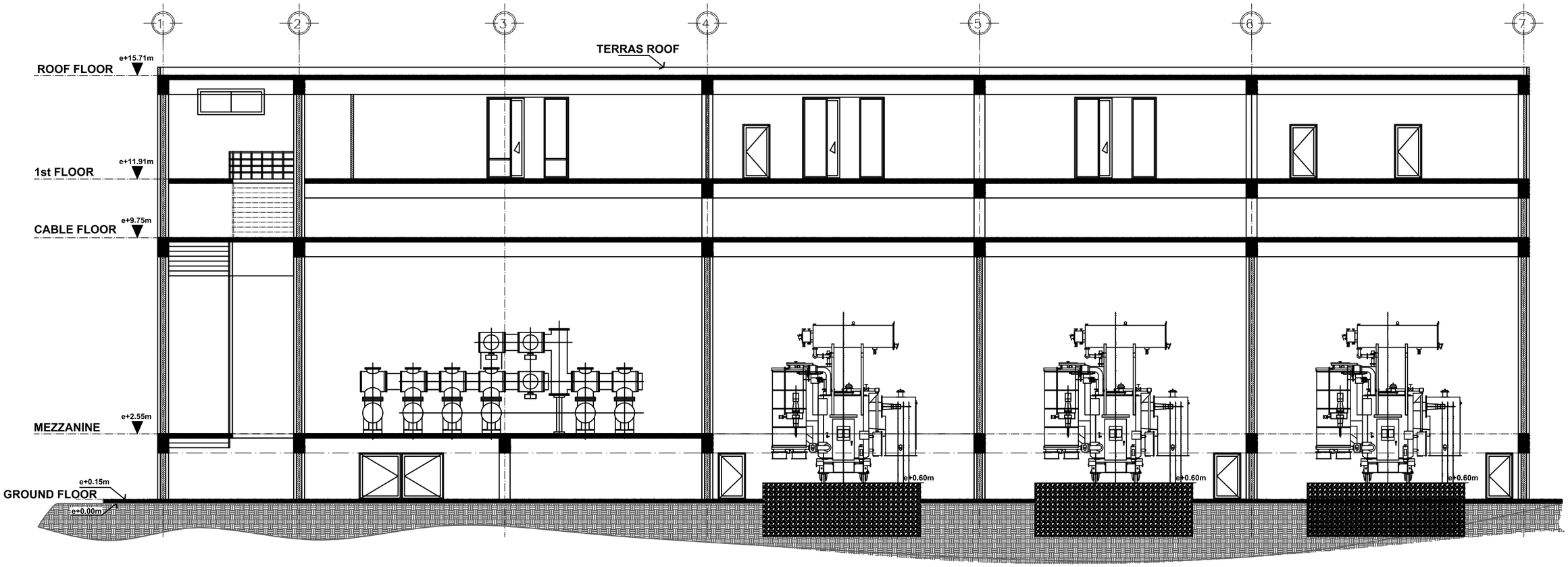

SECTION
A-A

REV	DESCRIPTION	DATE	DESIGN	DRAWN	CHECK	RECOM	APPROVE	ACTION	SIGNATURE	DATE
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Distribution System Construction Project
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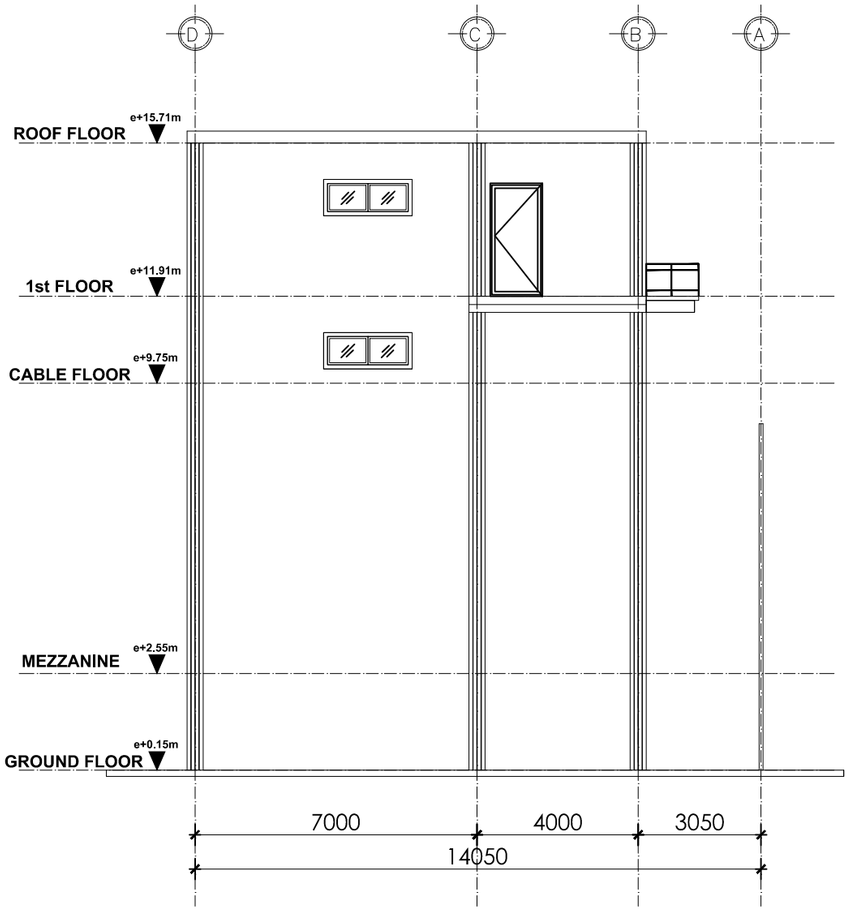
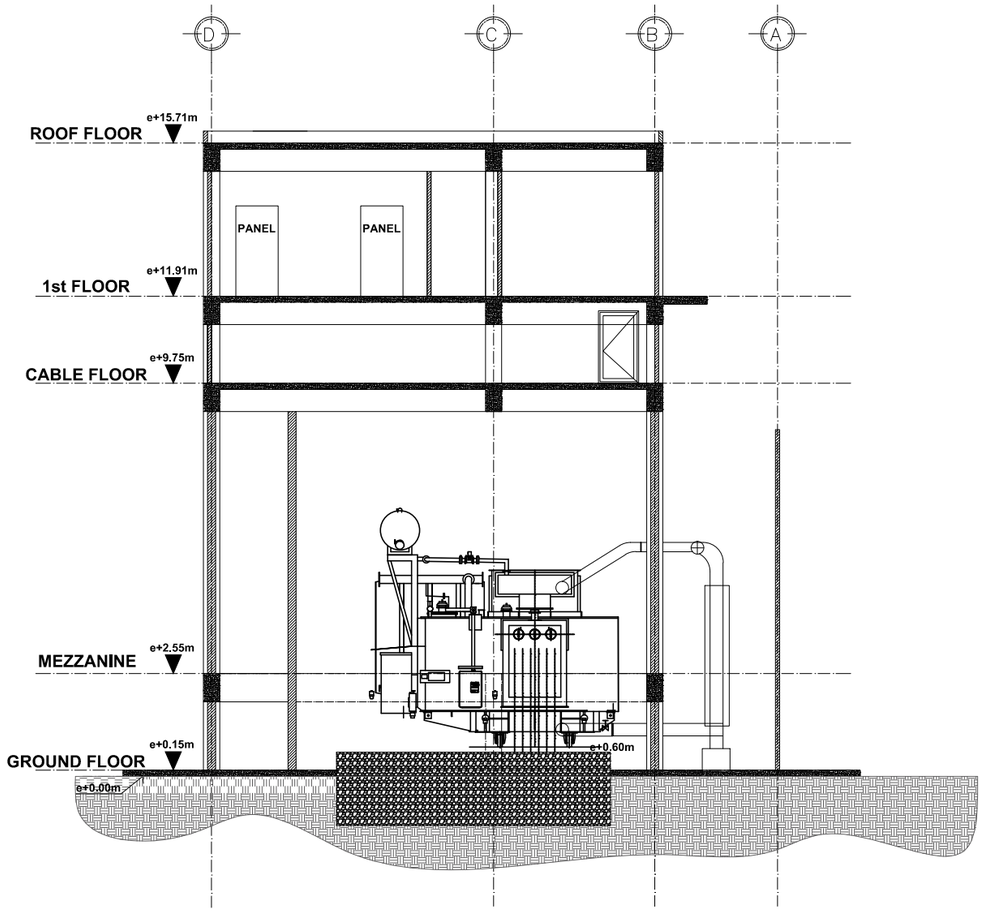
DRAWING No.

SHEET No.

REV.



SIDE-VIEW



SECTION
B-B

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CONSULTANT:

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Preparatory Survey for Phnom Penh Transmission Line
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Distribution System Construction Project
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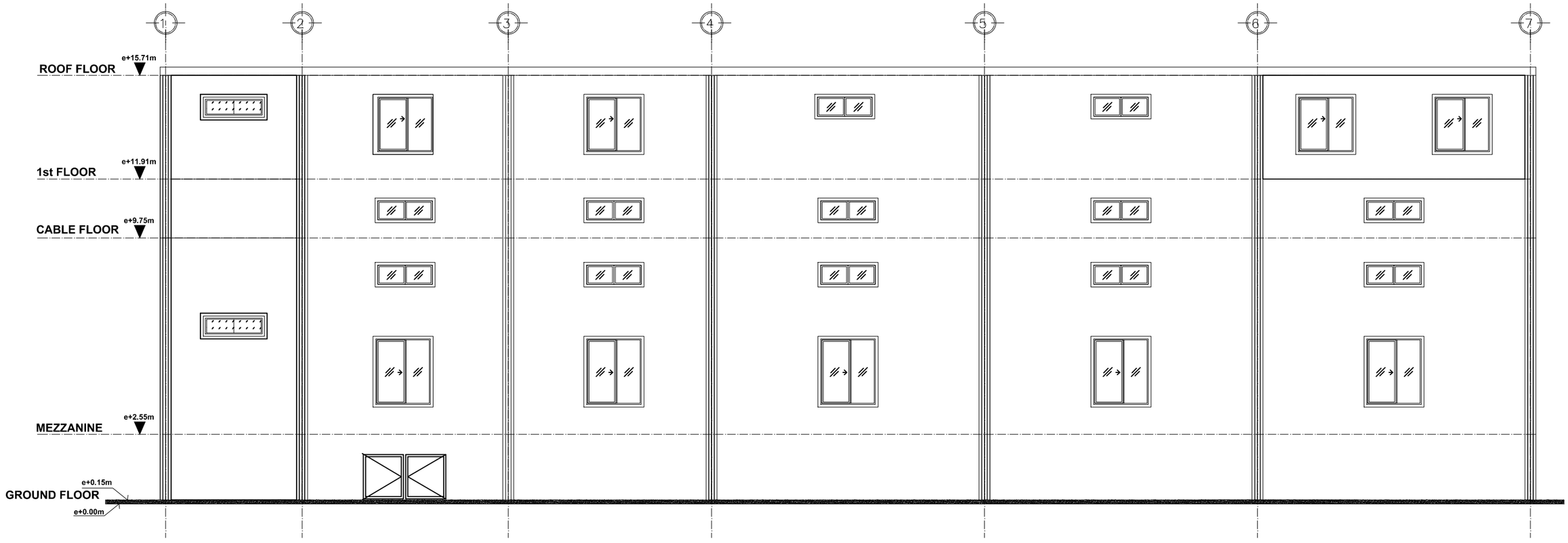
DRAWING No.

SHEET No.

REV.



FRONT-VIEW

REV	DESCRIPTION	DATE	DESIGN	DRAWN	CHECK	RECOM	APPROVE	ACTION	SIGNATURE	DATE
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DRAWING No.

SHEET No.

REV.