

4. 討議議事録 (M/D)

**Minutes of Discussions
on the Preparatory Survey
on the Project for Power Supply to Accra Central
in the Republic of Ghana
(First Field Survey)**

In response to the request from the Government of the Republic of Ghana (hereinafter referred to as “Ghana”), the Japan International Cooperation Agency (hereinafter referred to as “JICA”), in consultation with the Government of Japan, decided to conduct a Preparatory Survey (hereinafter referred to as “the Survey”) on the Project for Power Supply to Accra Central (hereinafter referred to as “the Project”).

JICA sent to Ghana the Preparatory Survey Team (hereinafter referred to as “the Team”) headed by Mr. Fuyuki Sagara, Advisor, Energy and Mining Division 1, Industrial Development and Public Policy Department, JICA, to conduct the first field survey and the Team is scheduled to stay in the country from 12th January to 17th February, 2014.

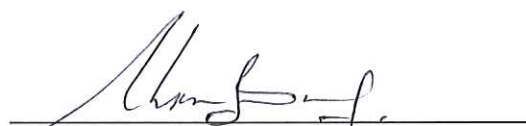
The Team held discussions with the concerned officials of Ghana and conducted a field survey in Ghana.

In the course of the discussions, both sides have confirmed the main items described in the attached sheets hereto. The Team will proceed with further study and prepare the preparatory survey report.

Accra, Ghana
23rd January, 2014

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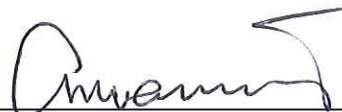
Mr. Fuyuki Sagara
Leader
Preparatory Survey Team
Japan International Cooperation Agency



Prof. Thomas Mba Akabzaa
Chief Director
Ministry of Energy and Petroleum



Mr. Kwadwo Awua-Peasah
Director
External Resources Mobilization-Bilateral
Ministry of Finance



Mr. William Amuna
Chief Executive
Ghana Grid Company Limited



Mr. William Hutton-Mensah
Managing Director
Electricity Company of Ghana Limited

- (2) The Team will study further the appropriateness of each component and technical specifications from the viewpoint of necessity and relevance as Japan's Grant Aid scheme, and will compile the findings into the preparatory survey report for the project appraisal process of the Government of Japan.
- (3) In addition to the above mentioned components, the Ghana side strongly requested installation of 161 kV transmission line between A4 BSP (Pokuase BSP) and Mallam BSP, though the construction of A4 BSP has not been committed yet. The Ghana side also requested procurement of 3 circuits of 161 kV transmission line (Approx. 25 km) between Volta BSP and Achimota BSP as an alternative. However both sides confirmed that those additional components were not to be covered by the Project because of the relevancy of the Japan's Grant Aid scheme and constraints of the Preparatory Survey scope.
- (4) The Team strongly recommended that those upgrading works for 161kV mentioned in (3) above be undertaken by the Ghana side as soon as possible. The Team also took note those proposals by the Ghana side and will report to the relevant authorities of Japan for consideration of future support.

6. Japan's Grant Aid Scheme

- (1) The Ghana side has understood Japan's Grant Aid Scheme explained by the Team as described in Annex-5 and Annex-6.
- (2) The Ghana side will take the necessary measures, as described in Annex-7, for smooth implementation of the Project.

7. Environmental and Social Considerations

- (1) The Team explained JICA's Guidelines for Environmental and Social Considerations to the Ghana side and the Ghana side agreed to comply with the guidelines. The Ghana side will take necessary measures of the environmental and social consideration for the Project in accordance with both the JICA's guidelines and related environmental regulations of Ghana.
- (2) The Ghana side shall complete Environmental Impact Assessment and obtain Environmental Permit for the Project until July, 2014.
- (3) The Ghana side shall carry out the stakeholder meetings for the project area and shall report the result to the Team by 15th February, 2014.

8. Schedule of the Study

- (1) The Team will proceed with further studies until 17th February, 2014.
- (2) JICA will prepare the draft report of the Preparatory Survey and dispatch a team to Ghana in order to explain its contents to the Ghana side in May 2014.

9. Other Relevant Issues

- (1) Collaboration with relevant agencies/organizations

GRIDCo, as the implementing agency of the Project, shall coordinate closely with the relevant agencies/organizations for smooth implementation of the Project. Especially, GRIDCo shall coordinate with ECG to ensure the appropriate connection between the Project components and the existing distribution system. ECG shall also cooperate with GRIDCo and provide GRIDCo with the necessary information on the distribution components targeted in the Project in timely manner.

After completion of the Project, distribution components provided under the Project shall be transferred to ECG in accordance with its mandate.

- FA (2) Obligations/Undertakings of the Ghana side for the Project

- 1) The Ghana side shall schedule power outages required for installation work of the Project and carry out them in timely manner. The Ghana side shall also manage any issue concerning the power outages, including related procedures, compensation and grievances from customers.
- 2) The Ghana side shall decommission and remove the existing towers, including their foundations, of 33 kV sub-transmission line between Primary Station D and E along the route for 161 kV transmission line of the Project before the commencement of the installation work covered by the Japanese side. The Ghana side shall also decommission and remove the existing 33 kV terminal poles, capacitor banks, Ring Main Unit, cables and any existing facility within the area before the commencement of the installation work of Accra Central BSP covered by the Japanese side.
- 3) The Ghana side shall secure a temporary storage yard (Approx. 5,000 m²) for the Project within the lot of ECG Project Office. The Ghana side shall also prepare an access point at ~~ECG Project Office, where construction vehicles go through to the route of 161 kV~~ transmission line of the Project along the railway for their installation.
- 4) The Ghana side shall obtain permit for the implementation of the Project to enter the business establishments where the 161 kV towers of the Project will be located. The Ghana side shall also obtain permit for 161 kV transmission lines of the Project to go across the public road from concerned authorities.
- 5) The Ghana side shall install 33 kV underground cables to be procured by the Japanese side for the section between Primary Station D and E, immediately after the cables are delivered to the Project site.

(3) Questionnaire requested by the Team to the Ghana side

The Ghana side shall answer the questionnaire requested by the Team by 31st January, 2014. Especially, the evidence which shows the implementation agency can use the targeted sites and routs for the Project shall be submitted to the Team by 31st January, 2014.

(4) Training Course in Japan

GRIDCo requested the Team that the GRIDCo's staff to be involved in the Project be able to participate in technical training in Japan in order to enhance their capacity of the operation and maintenance of GIS substation as well as transmission system. ECG also requested the Team to consider that ECG staff be able to attend the JICA's training course for distribution system.

The Team explained that the Project would provide the On - the - Job Training of GIS operation during the installation work. The Team also took note those requests for training in Japan and will report them to relevant authorities in Japan. The Team also recommended both organizations to discuss with the JICA Ghana Office on the application process for the JICA's training courses.

(End)

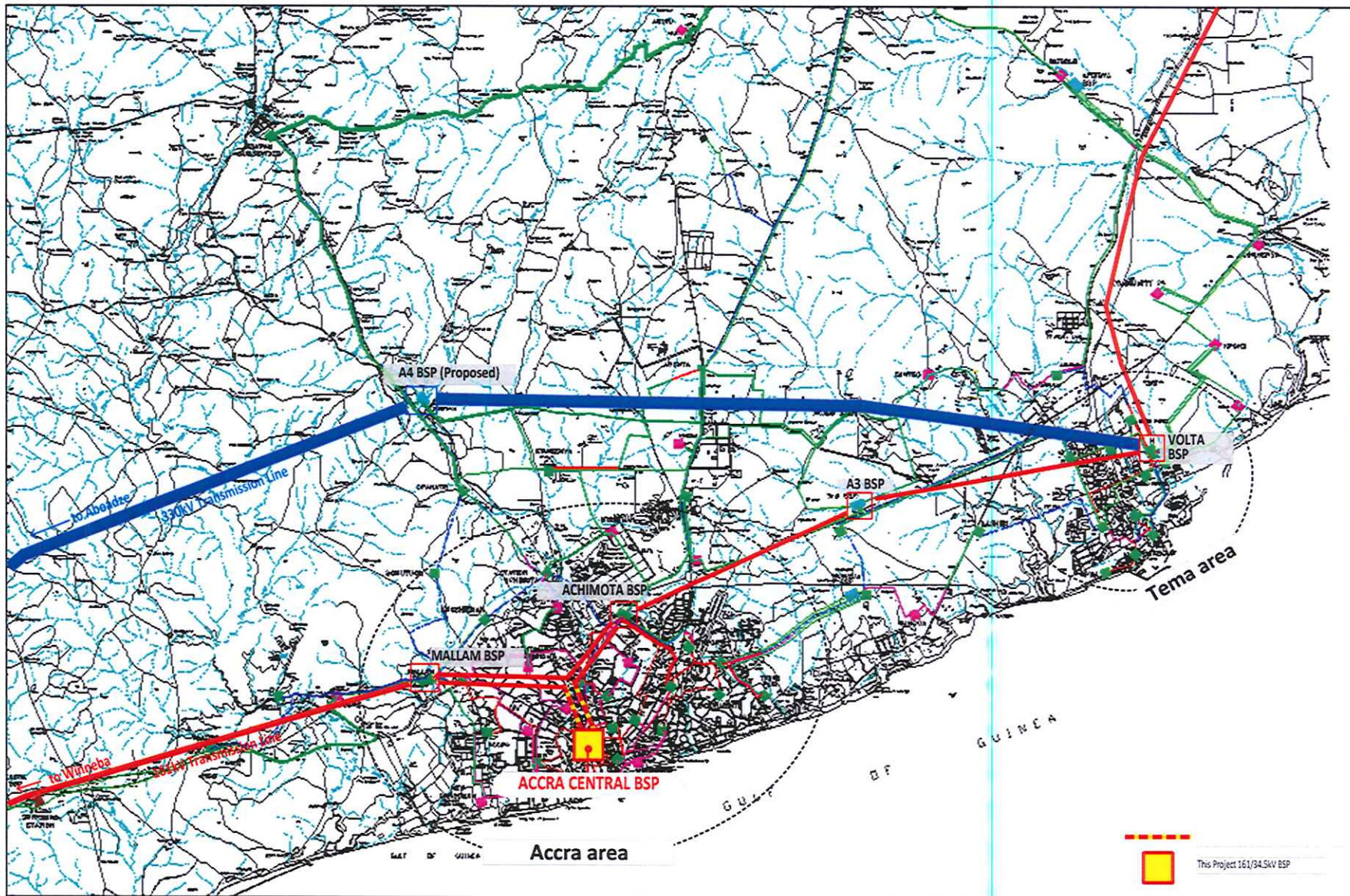
<List of Annex>

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LOCATION OF THE PROJECT SITES

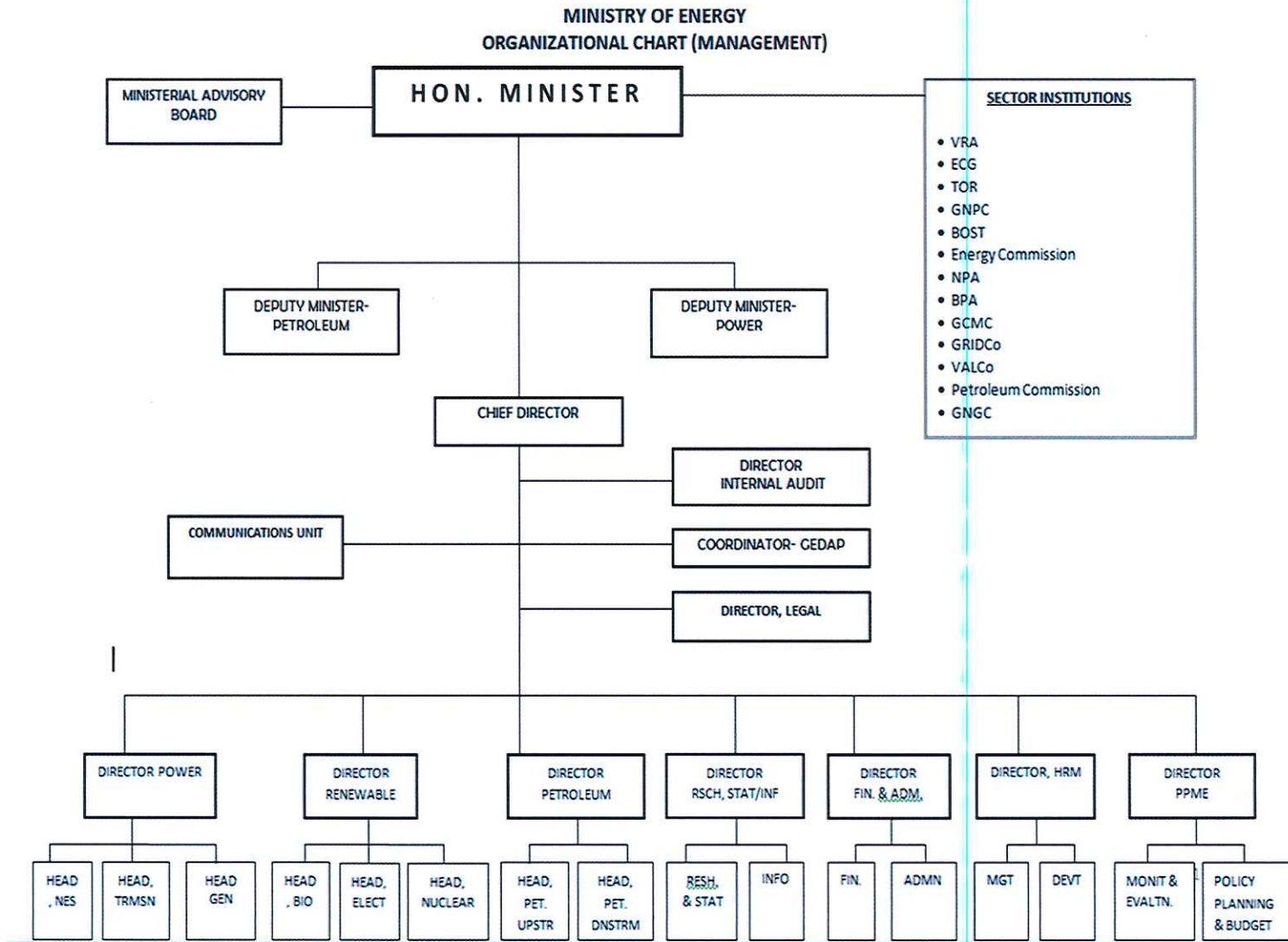


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ORGANIZATION STRUCTURE OF MINISTRY OF ENERGY AND PETROLEUM

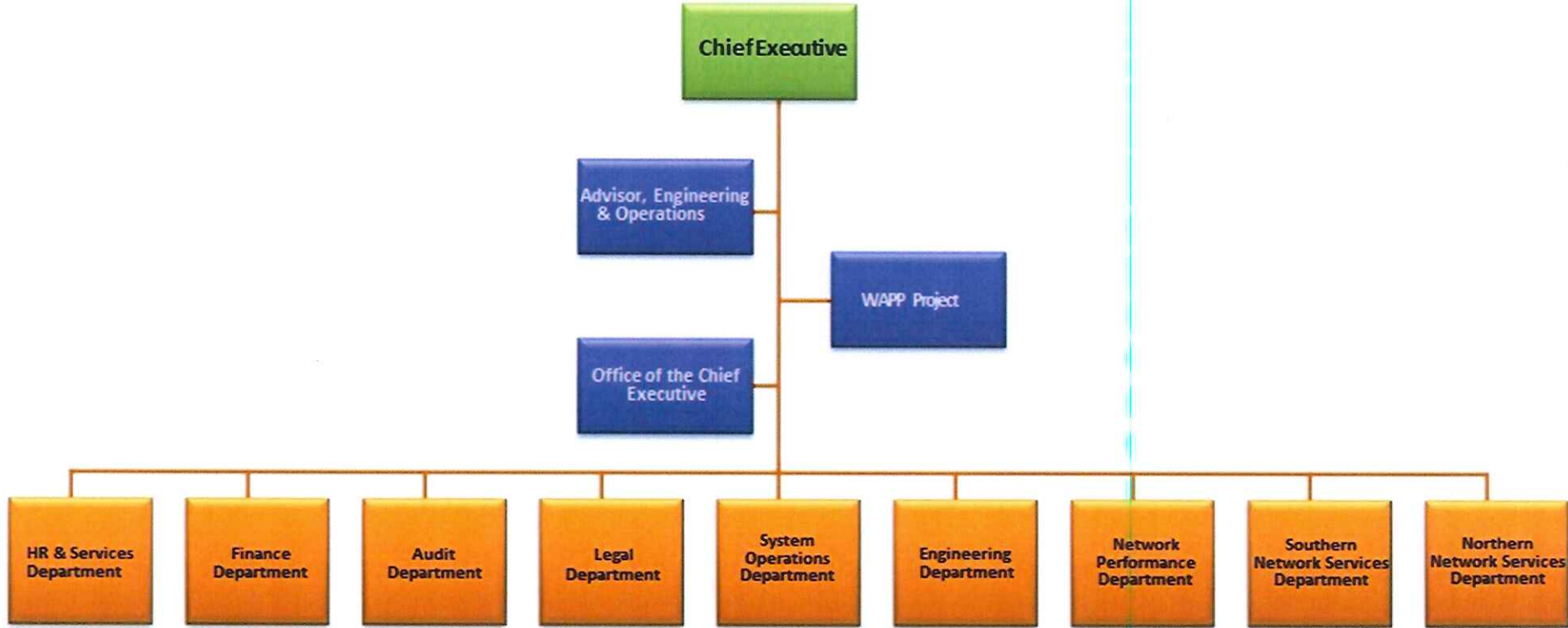


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ORGANIZATION STRUCTURE OF GHANA GRID COMPANY LIMITED

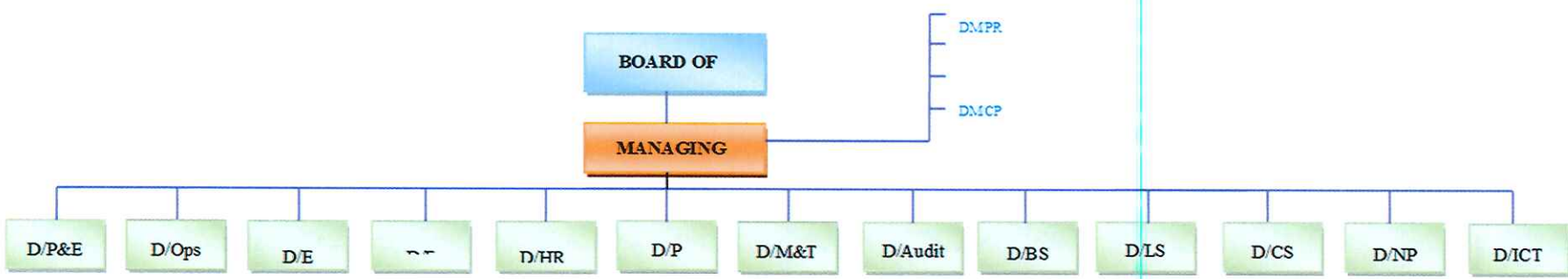


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ORGANIZATION STRUCTURE OF ELECTRICITY COMPANY OF GHANA LIMITED



- | | | | | | |
|------|---|-------------------------------------|-----|---|---------------------------------------|
| D | - | Director | BS | - | Board Secretariat |
| P&E | - | Premises & Estates | LS | - | Legal Services |
| Ops | - | Operations | CS | - | Customer Services |
| E | - | Engineering | NP | - | Network Projects |
| F | - | Finance | ICT | - | Information Communications Technology |
| HR | - | Human Resources | DM | - | Divisional Manager |
| P | - | Procurement | CP | - | Corporate Planning |
| M&T | - | Materials and Transport | PR | - | Public Relation |
| RAGA | - | Regulatory and Governmental Affairs | | | |

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JAPAN'S GRANT AID

Based on the new JICA law entered into effect on October 1, 2008, JICA is designated as the executing agency of the Grant Aid for General Projects, for Fisheries and for Cultural Cooperation, etc.

The Grant Aid is non-reimbursable fund provided to a recipient country to procure the facilities, equipment and services (engineering services and transportation of the products, etc.) for its economic and social development in accordance with the relevant laws and regulations of Japan. The Grant Aid is not supplied through the donation of materials as such.

1. Grant Aid Procedures

The Japanese Grant Aid is supplied through following procedures :

- Preparatory Survey
 - The Survey conducted by JICA
- Appraisal & Approval
 - Appraisal by the GOJ and JICA, and Approval by the Japanese Cabinet
- Authority for Determining Implementation
 - The Notes exchanged between the GOJ and a recipient country
- Grant Agreement (hereinafter referred to as "the G/A")
 - Agreement concluded between JICA and a recipient country
- Implementation
 - Implementation of the Project on the basis of the G/A

2. Preparatory Survey

(1) Contents of the Survey

The aim of the preparatory Survey is to provide a basic document necessary for the appraisal of the Project made by the GOJ and JICA. The contents of the Survey are as follows:

- Confirmation of the background, objectives, and benefits of the Project and also institutional capacity of relevant agencies of the recipient country necessary for the implementation of the Project.
- Evaluation of the appropriateness of the Project to be implemented under the Grant Aid Scheme from a technical, financial, social and economic point of view.
- Confirmation of items agreed between both parties concerning the basic concept of the Project.
- Preparation of a outline design of the Project.
- Estimation of costs of the Project.

The contents of the original request by the recipient country are not necessarily approved in their initial form as the contents of the Grant Aid project. The Outline Design of the Project is confirmed based on the guidelines of the Japan's Grant Aid scheme.

JICA requests the Government of the recipient country to take whatever measures necessary to achieve its self-reliance in the implementation of the Project. Such measures must be guaranteed even though they may fall outside of the jurisdiction of the organization of the recipient country which actually implements the Project. Therefore, the implementation of the Project is confirmed by all relevant organizations of the recipient country based on the Minutes of Discussions.

(2) Selection of Consultants

For smooth implementation of the Survey, JICA employs (a) registered consulting firm(s). JICA selects (a) firm(s) based on proposals submitted by interested firms.

(3) Result of the Survey

JICA reviews the Report on the results of the Survey and recommends the GOJ to appraise the implementation of the Project after confirming the appropriateness of the Project.

3. Japan's Grant Aid Scheme

(1) The E/N and the G/A

After the Project is approved by the Cabinet of Japan, the Exchange of Notes (hereinafter referred to as "the E/N") will be signed between the GOJ and the Government of the recipient country to make a pledge for assistance, which is followed by the conclusion of the G/A between JICA and the Government of the recipient country to define the necessary articles to implement the Project, such as payment conditions, responsibilities of the Government of the recipient country, and procurement conditions.

(2) Selection of Consultants

In order to maintain technical consistency, the consulting firm(s) which conducted the Survey will be recommended by JICA to the recipient country to continue to work on the Project's implementation after the E/N and G/A.

(3) Eligible source country

Under the Japanese Grant Aid, in principle, Japanese products and services including transport or those of the recipient country are to be purchased. When JICA and the Government of the recipient country or its designated authority deem it necessary, the Grant Aid may be used for the purchase of the products or services of a third country. However, the prime contractors, namely, constructing and procurement firms, and the prime consulting firm are limited to "Japanese nationals".

(4) Necessity of "Verification"

The Government of the recipient country or its designated authority will conclude contracts denominated in Japanese yen with Japanese nationals. Those contracts shall be verified by JICA. This "Verification" is deemed necessary to fulfill accountability to Japanese taxpayers.

(5) Major undertakings to be taken by the Government of the Recipient Country

In the implementation of the Grant Aid Project, the recipient country is required to undertake such necessary measures as Annex-7.

(6) "Proper Use"

The Government of the recipient country is required to maintain and use properly and effectively the facilities constructed and the equipment purchased under the Grant Aid, to assign staff necessary for this operation and maintenance and to bear all the expenses other than those covered by the Grant Aid.

(7) "Export and Re-export"

The products purchased under the Grant Aid should not be exported or re-exported from the recipient country.

(8) Banking Arrangements (B/A)

- a) The Government of the recipient country or its designated authority should open an account under the name of the Government of the recipient country in a bank in Japan (hereinafter referred to as "the Bank"). JICA will execute the Grant Aid by making payments in Japanese yen to cover the obligations incurred by the Government of the recipient country or its designated authority under the Verified Contracts.
- b) The payments will be made when payment requests are presented by the Bank to JICA under an Authorization to Pay (A/P) issued by the Government of the recipient country or its designated authority.

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(9) Authorization to Pay (A/P)

The Government of the recipient country should bear an advising commission of an Authorization to Pay and payment commissions paid to the Bank.

(10) Social and Environmental Considerations

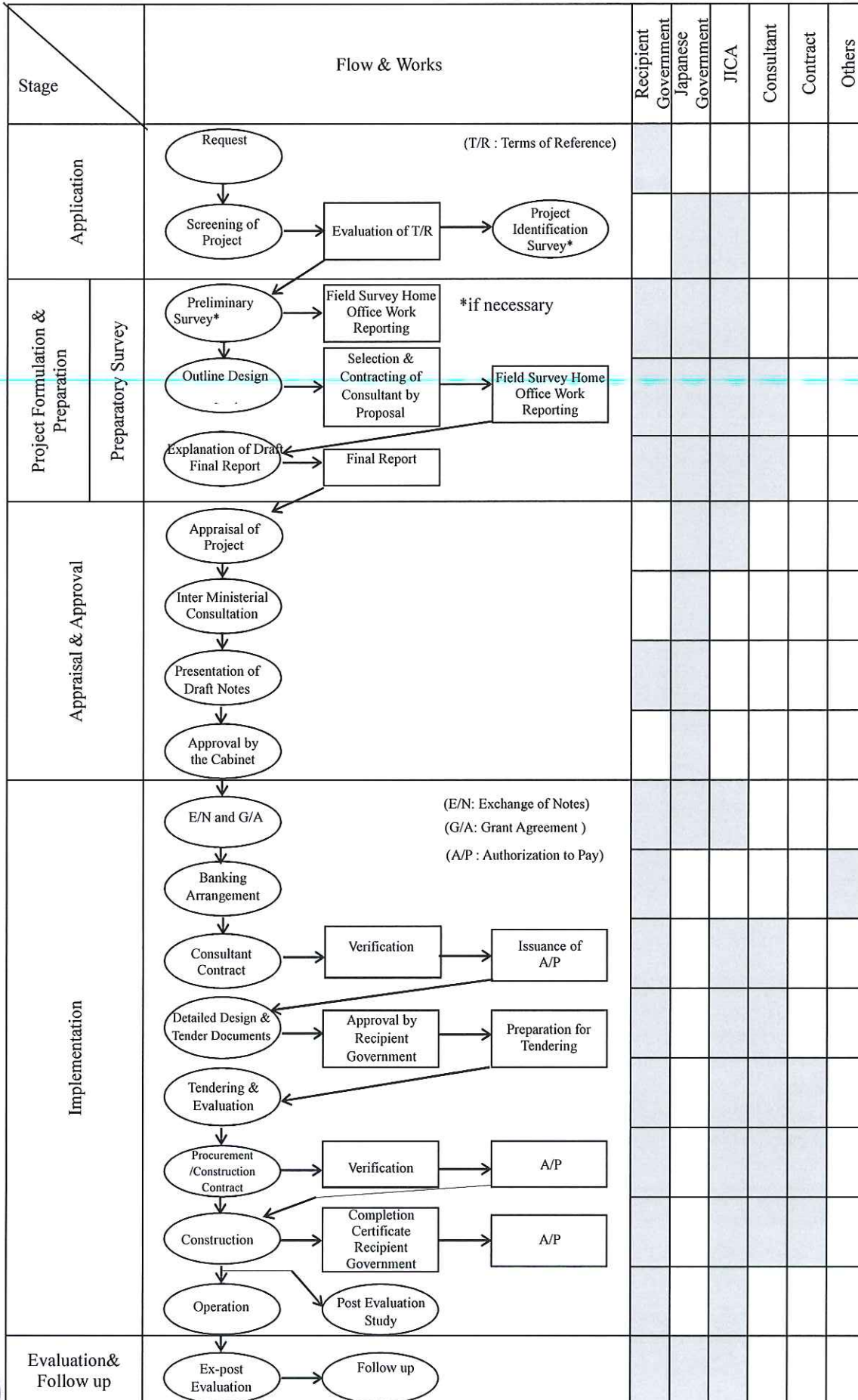
A recipient country must carefully consider social and environmental impacts by the Project and must comply with the environmental regulations of the recipient country and JICA socio-environmental guidelines.

(End)

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FLOW CHART OF JAPAN'S GRANT AID PROCEDURES



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Major Undertakings to be taken by Each Government

No.	Items	To be covered by Grant Aid	To be covered by Recipient Side
1	to secure lots of land necessary for the implementation of the Project and to clear the sites;		●
2	To construct the following facilities		
	1) The building	●	
	2) The gates and fences in and around the site		●
	3) The parking lot	●	
	4) The road within the site	●	
	5) The road outside the site (including Access road)		●
3	To provide facilities for distribution of electricity, water supply and drainage and other incidental facilities necessary for the implementation of the Project outside the sites		
	1) Electricity		
	a. The distributing power line to the site		●
	b. The drop wiring and internal wiring within the site	●	
	c. The main circuit breaker and transformer	●	
	2) Water Supply		
	a. The city water distribution main to the site		●
	b. The supply system within the site (receiving and elevated tanks)	●	
	3) Drainage		
	a. The city drainage main (for storm sewer and others to the site)		●
	b. The drainage system (for toilet sewer, common waste, storm drainage and others) within the site	●	
	4) Gas Supply		
	a. The city gas main to the site		●
	b. The gas supply system within the site	●	
	5) Telephone System		
	a. The telephone trunk line to the main distribution frame/panel (MDF) of the building		●
	b. The MDF and the extension after the frame/panel	●	
	6) Furniture and Equipment		
	a. General furniture		●
	b. Project equipment	●	
4	To ensure prompt unloading and customs clearance of the products at ports of disembarkation in the recipient country and to assist internal transportation of the products		
	1) Marine (Air) transportation of the Products from Japan to the recipient country	●	
	2) Tax exemption and custom clearance of the Products at the port of disembarkation		●
	3) Internal transportation from the port of disembarkation to the project site	●	
5	To ensure that customs duties, internal taxes and other fiscal levies which may be imposed in the recipient country with respect to the purchase of the products and the services be exempted		●
6	To accord Japanese nationals whose services may be required in connection with the supply of the products and the services such facilities as may be necessary for their entry into the recipient country and stay therein for the performance of their work		●
7	To ensure that the Facilities and the products be maintained and used properly and effectively for the implementation of the Project		●
8	To bear all the expenses, other than those covered by the Grant, necessary for the implementation of the Project		●
9	To bear the following commissions paid to the Japanese bank for banking services based upon the B/A		
	1) Advising commission of A/P		●
	2) Payment commission		●
10	To give due environmental and social consideration in the implementation of the Project.		●

(B/A : Banking Arrangement, A/P : Authorization to pay)

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5. 参考資料/入手資料リスト
 調査名：ガーナ国首都圏電力流通強化計画

番号	名称	形態 文書・ビデオ・ 地図・写真等	オリジナル・コピー	発行機関	発行元
1	Transmission System Master Plan for Ghana (November 2011)	文書	コピー	GRIDCo	Nov. 2011
2	Generation Master Plan Study for Ghana (February 2012)	文書	コピー	GRIDCo	Feb. 2011
3	Energizing Economic Growth in Ghana : Making the Power and Petroleum Sectors Rise to the Challenge	文書	コピー	GRIDCo	Jun. 2013
4	National Interconnected Transmission System of Ghana	地図	コピー	GRIDCo	Sep. 2013
5	Technical Assessment (Task 3) Report (December 2012) Final Draft	文書	コピー	United States Trade and Development Agency (USTDA)	Dec. 2012
6	Daily Reports in 2013	データ・帳票	コピー	GRIDCo	2013
7	Annual (Quarterly) Reports (2005-2013)	データ・帳票	コピー	GRIDCo	2013
8	Monthly Energy Consumption in 2013	データ・帳票	コピー	GRIDCo	2013
9	National Electricity Grid Code	法令	コピー	Energy Commission	Oct. 2009
10	Accra 33kV GEOGRAPHIC NETWORK - MODIFIED FOR PROPOSED ODAWNA BSP AT STATION E	地図	コピー	ECG	Feb. 2013
11	Accra 33kV Single Line Diagram	系統図	コピー	ECG	Feb. 2013
12	Framework for Environmental and Social Management of Bulk Transmission Line Project in Ghana	文書	ソフトコピー	GRIDCo	Jan. 2009
13	Land Acquisition and Resettlement Policy Framework (Draft)	文書	ソフトコピー	GRIDCo	Jan. 2012

6. 概略設計図

単線結線図

図面番号	図面名称
E-01	アクラセントラル境界変電所 単線結線図

概略配置図

図面番号	図面名称
A-03	アクラセントラル境界変電所 概略配置図
E-02	グラフィックロード変電所 機器配置図

161kV 送電線ルート図、新設鉄塔姿図

図面番号	図面名称
T-01	送電線ルート図 (1)~(9)
T-02	鉄塔外形図 (1)~(3)

建築関係図

図面番号	図面名称
A-04	制御棟 地階平面図
A-05	制御棟 平面図(1階)
A-06	制御棟 平面図(2階、3階)
A-07	制御棟 屋上平面図、屋根伏図
A-08	制御棟 断面図(1)
A-09	制御棟 断面図(2)
A-10	制御棟 立面図(1)
A-11	制御棟 立面図(2)
A-12	変圧器基礎架台 地階平面図
A-13	変圧器基礎架台 平面図(1階)
A-14	変圧器基礎架台 断面図(1)
A-15	変圧器基礎架台 断面図(2)
A-16	配線暗渠(4) 平面図
A-17	配線暗渠(4) 断面図
A-18	変圧器及び GIS 間、配線暗渠(1)断面図
A-19	GIS 地階平面図
A-20	GIS 平面図

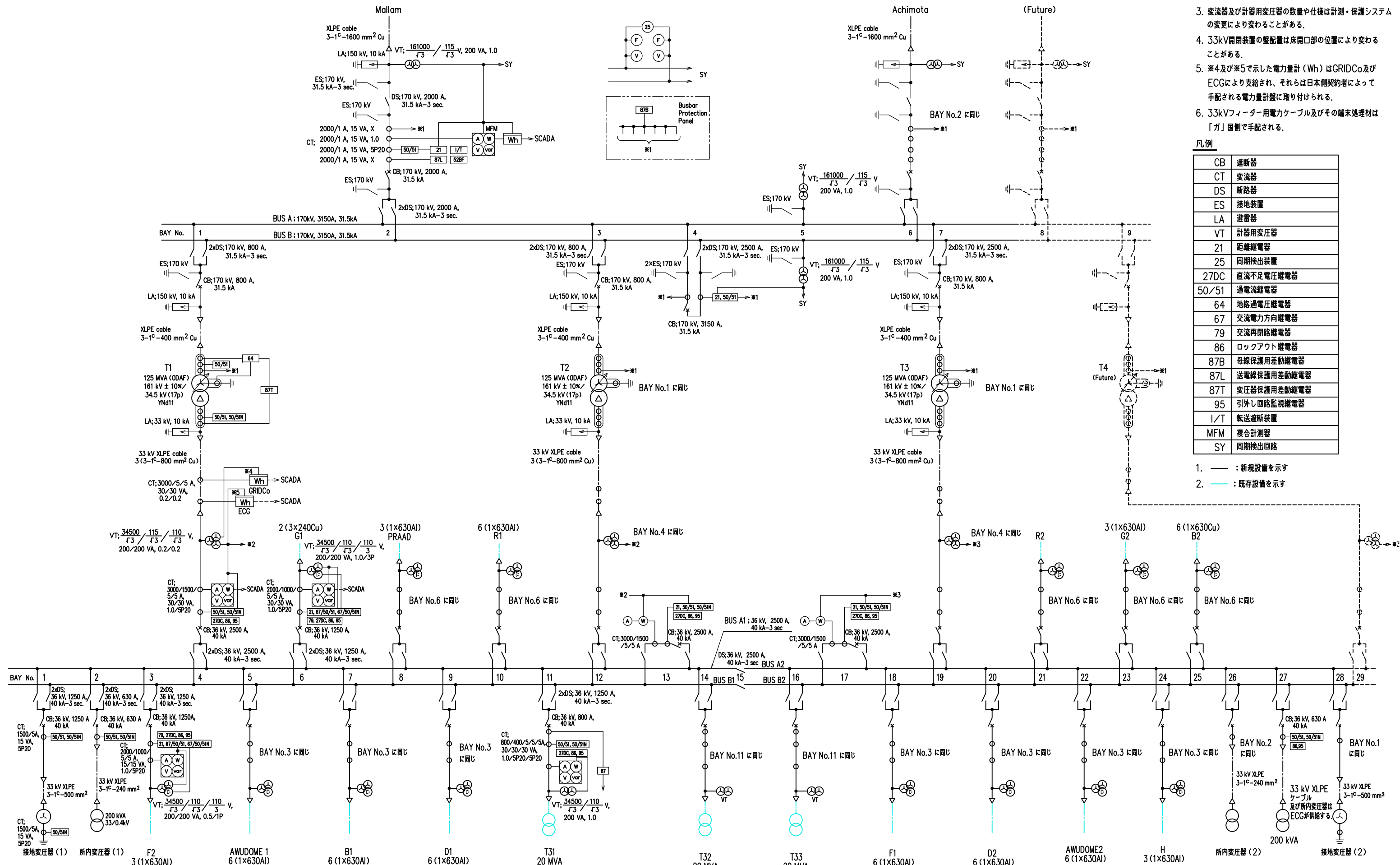
注記

1. 破線は将来用機器を示す。
2. 詳細の機器仕様は「日本側調達機材一覧表」参照。
3. 変流器及び計器用変圧器の数量や仕様は計測・保護システムの変更により変わることがある。
4. 33kV開閉装置の盤配置は床開口部の位置により変わることがある。
5. ※4及び※5で示した電力量計(Wh)はGRIDCo及びECGにより支給され、それらは日本側契約者によって手配される電力量計盤に取り付けられる。
6. 33kVフィーダー用電力ケーブル及びその端処理材は「ガ」国割で手配される。

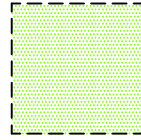
凡例

CB	遮断器
CT	変流器
DS	断路器
ES	接地装置
LA	避雷器
VT	計器用変圧器
21	距離継電器
25	同期検出装置
27DC	直流不足電圧継電器
50/51	過電流継電器
64	地絡過電圧継電器
67	交流電力方向継電器
79	交流再閉路継電器
86	ロックアウト継電器
87B	母線保護用差動継電器
87L	送電線保護用差動継電器
87T	変圧器保護用差動継電器
95	引外し回路監視継電器
I/T	転送遮断装置
MFM	複合計測器
SY	同期検出回路


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2. - - - : 既存設備を示す

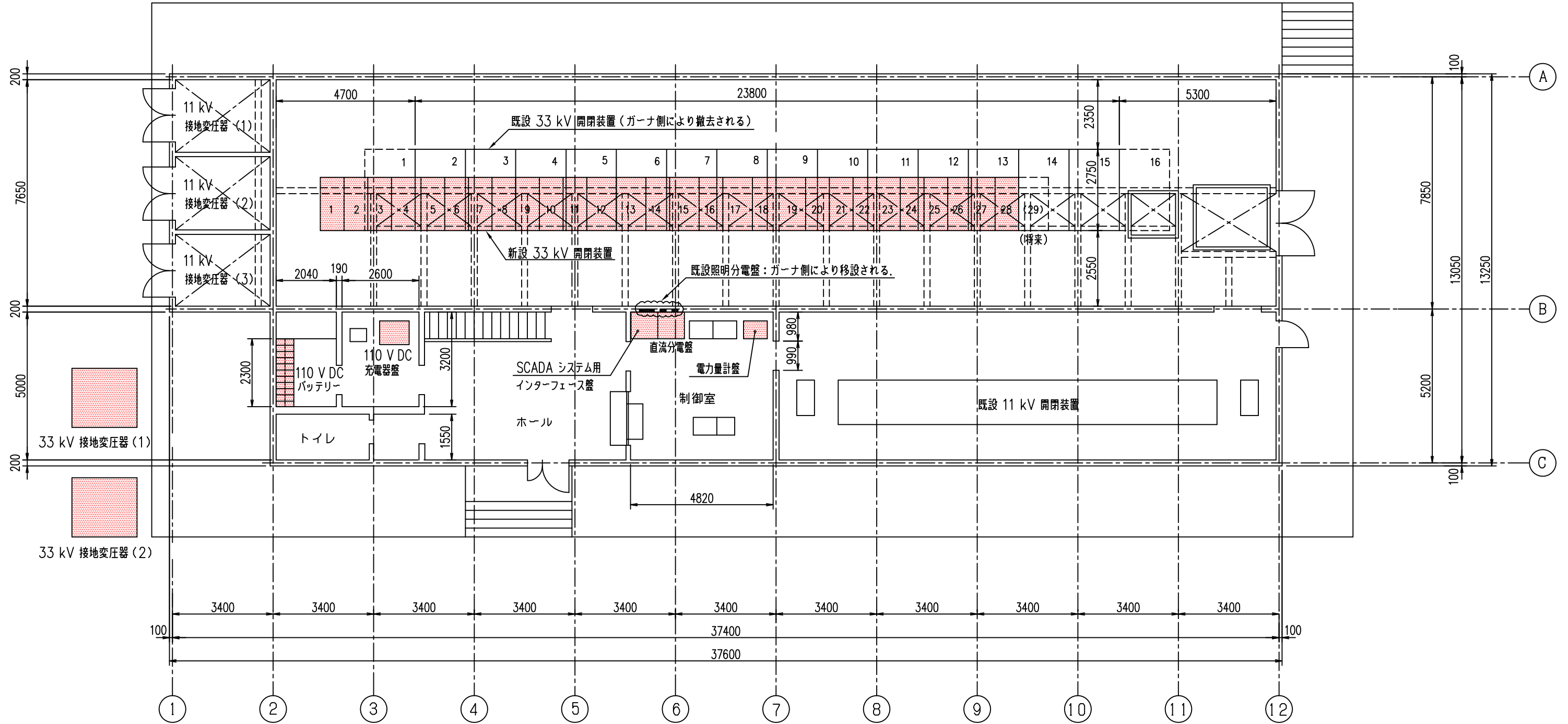


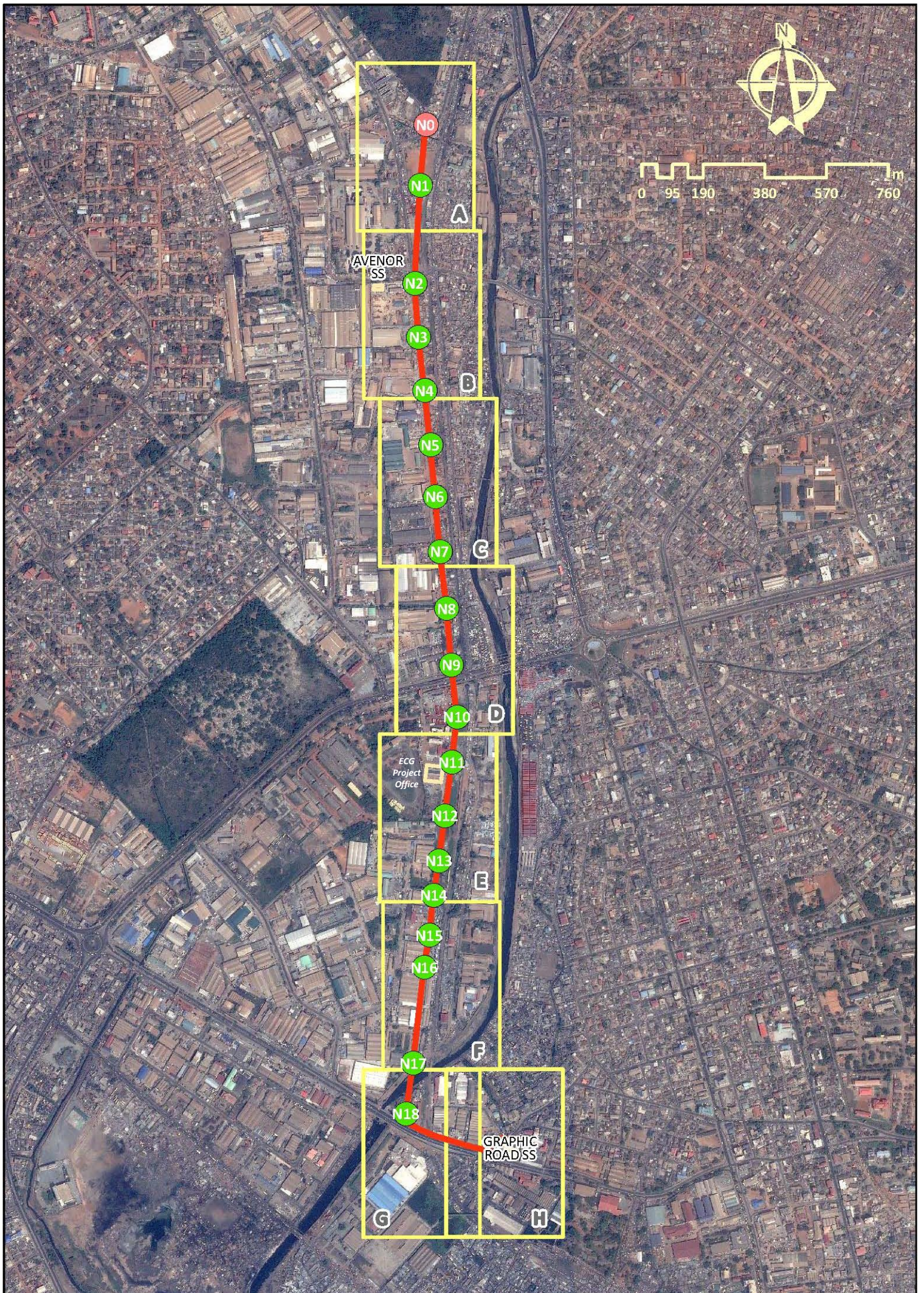
所内変圧器
(ECG供給)



注記

 : 日本側納入機器





T-01 電線ルート図 (1)



T-01 電線ルート図 (2)



T-01 電線ルート図 (3)



T-01 電線ルート図 (4)



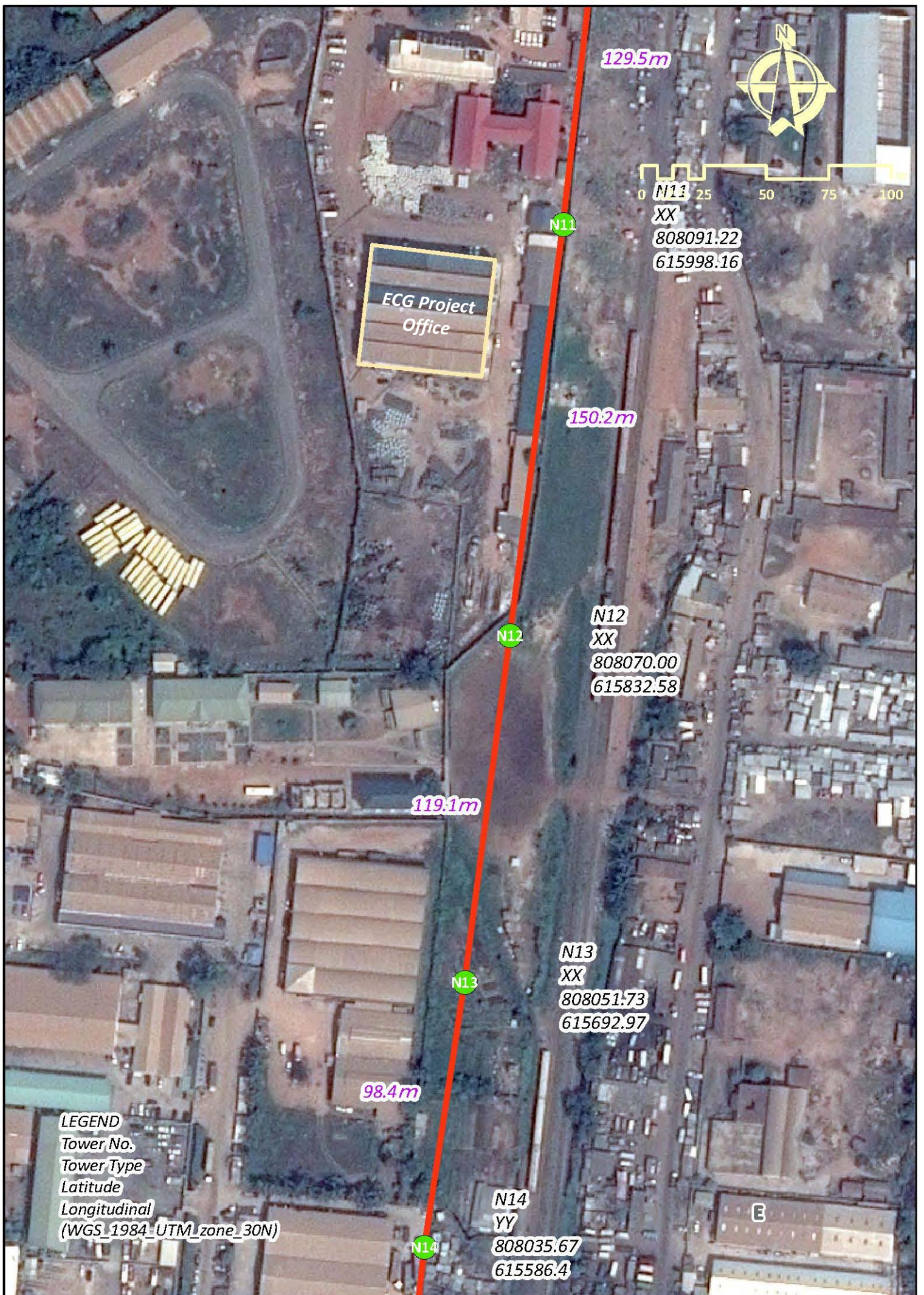
LEGEND
 Tower No.
 Tower Type
 Latitude
 Longitudinal
 (WGS_1984_UTM_zone_30N)

N8
 YY
 808075.44
 616475.19

N9
 YY
 808089.74
 616300.98

N10
 YY
 808107.25
 616139.65

T-01 電線ルート図 (5)



T-01 電線ルート図 (6)



103.0m

N15

N15
YY
808022.17
615462.38

145.0m

N16

N16
YY
808005.68
615362.26

258.0m

N17

N17
YY
807971.81
615065.55



LEGEND
Tower No.
Tower Type
Latitude
Longitudinal
(WGS_1984_UTM_zone_30N)

P

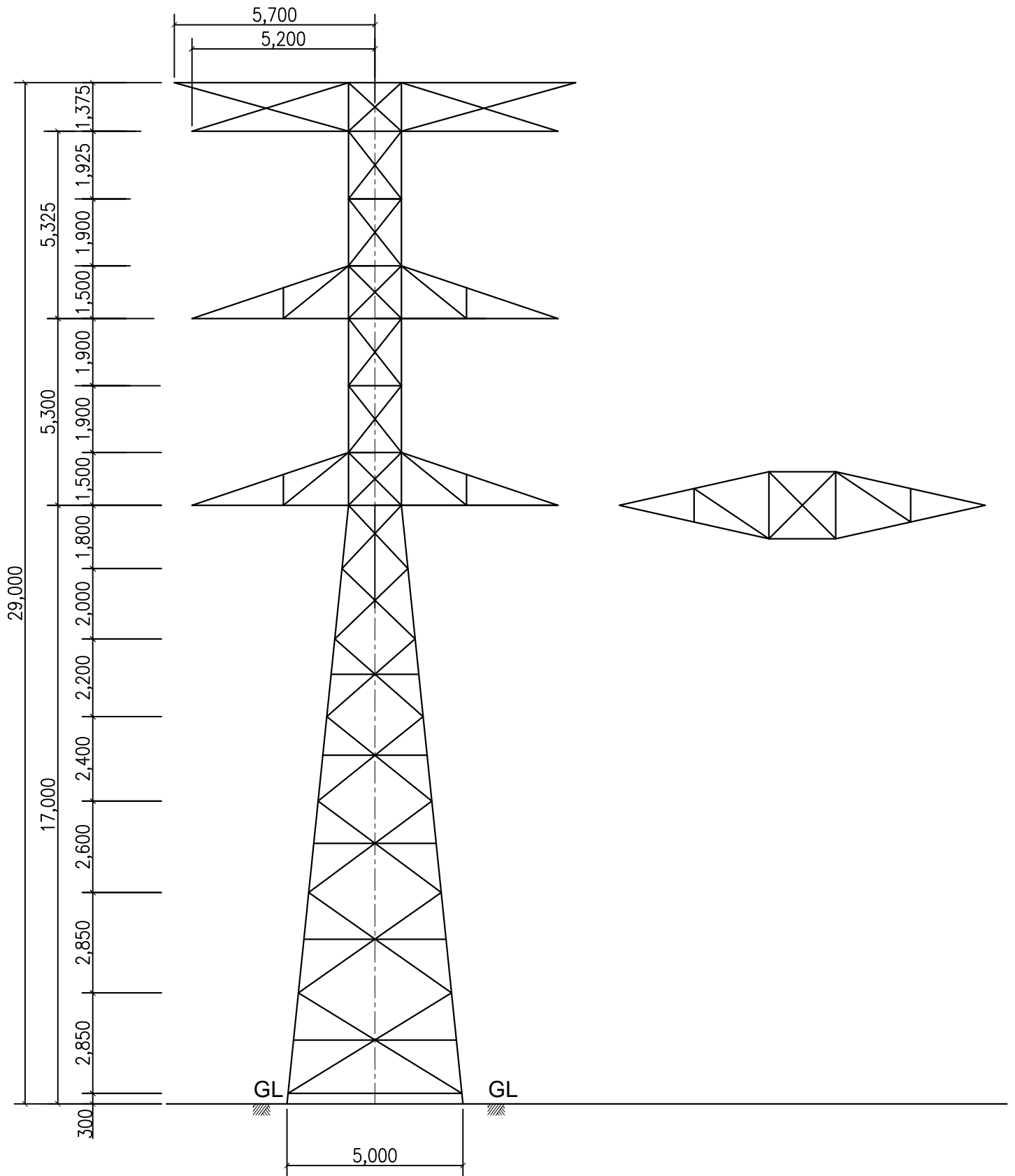
T-01 電線ルート図 (7)



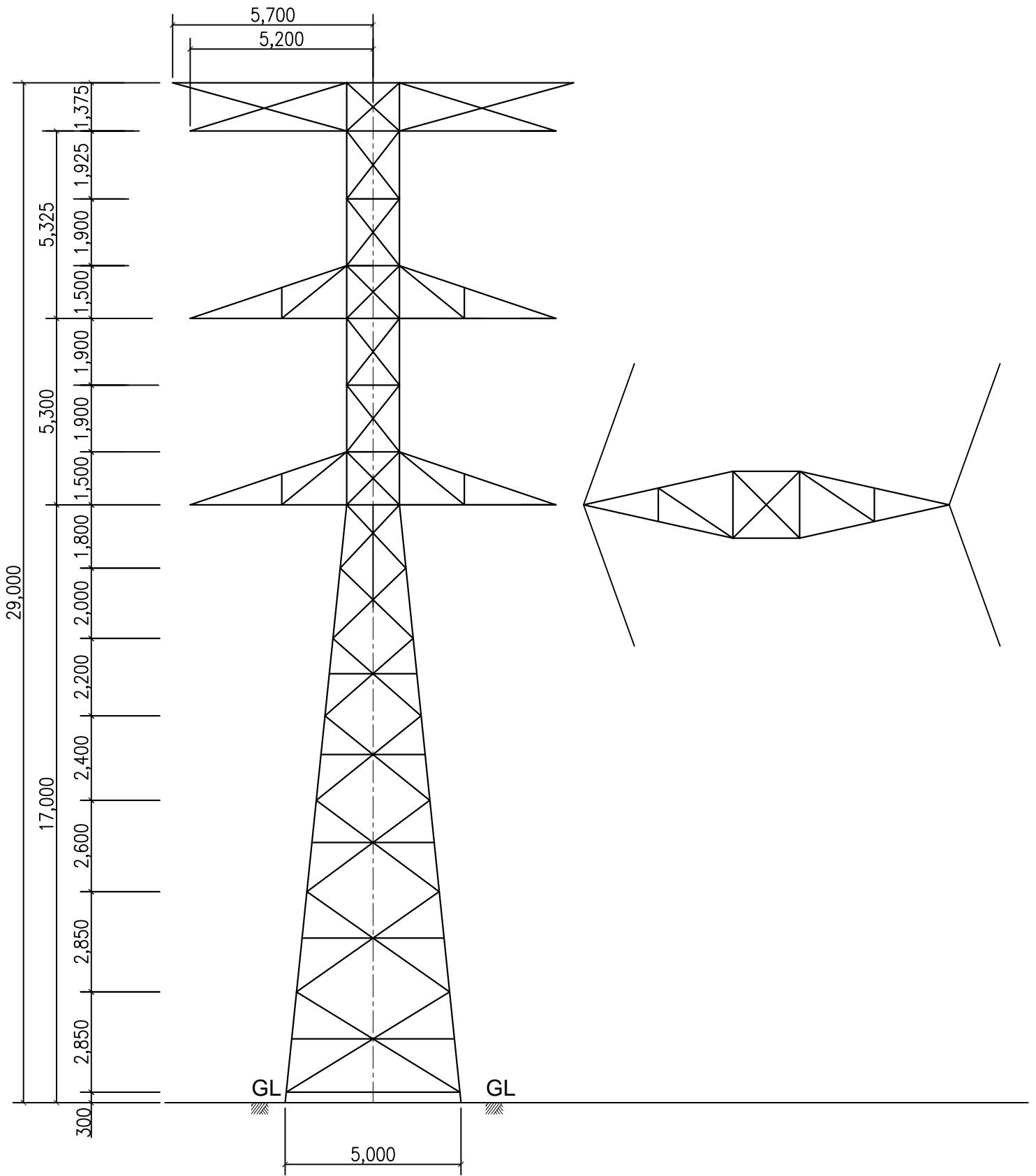
T-01 電線ルート図 (8)



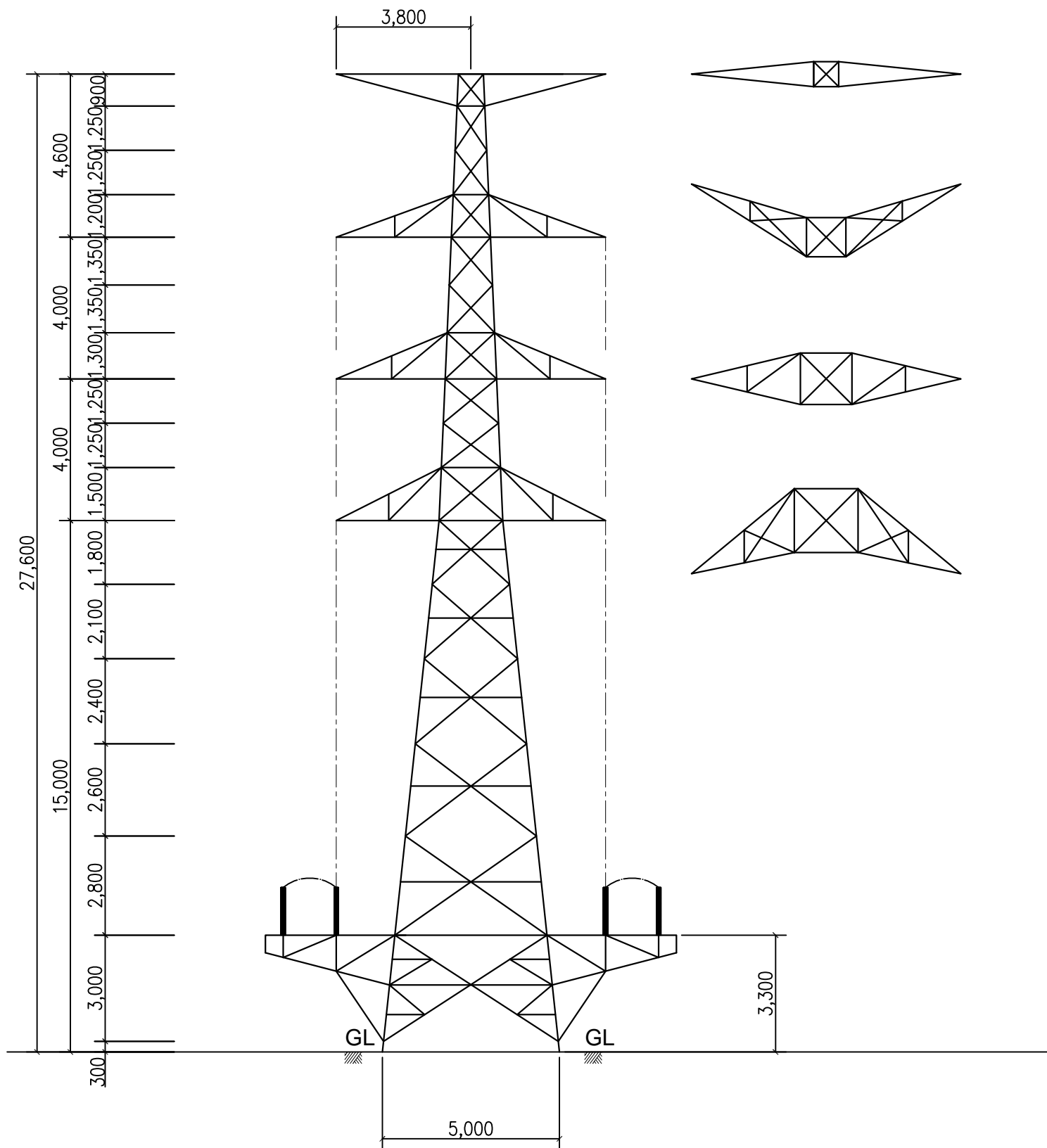
T-01 電線ルート図 (9)



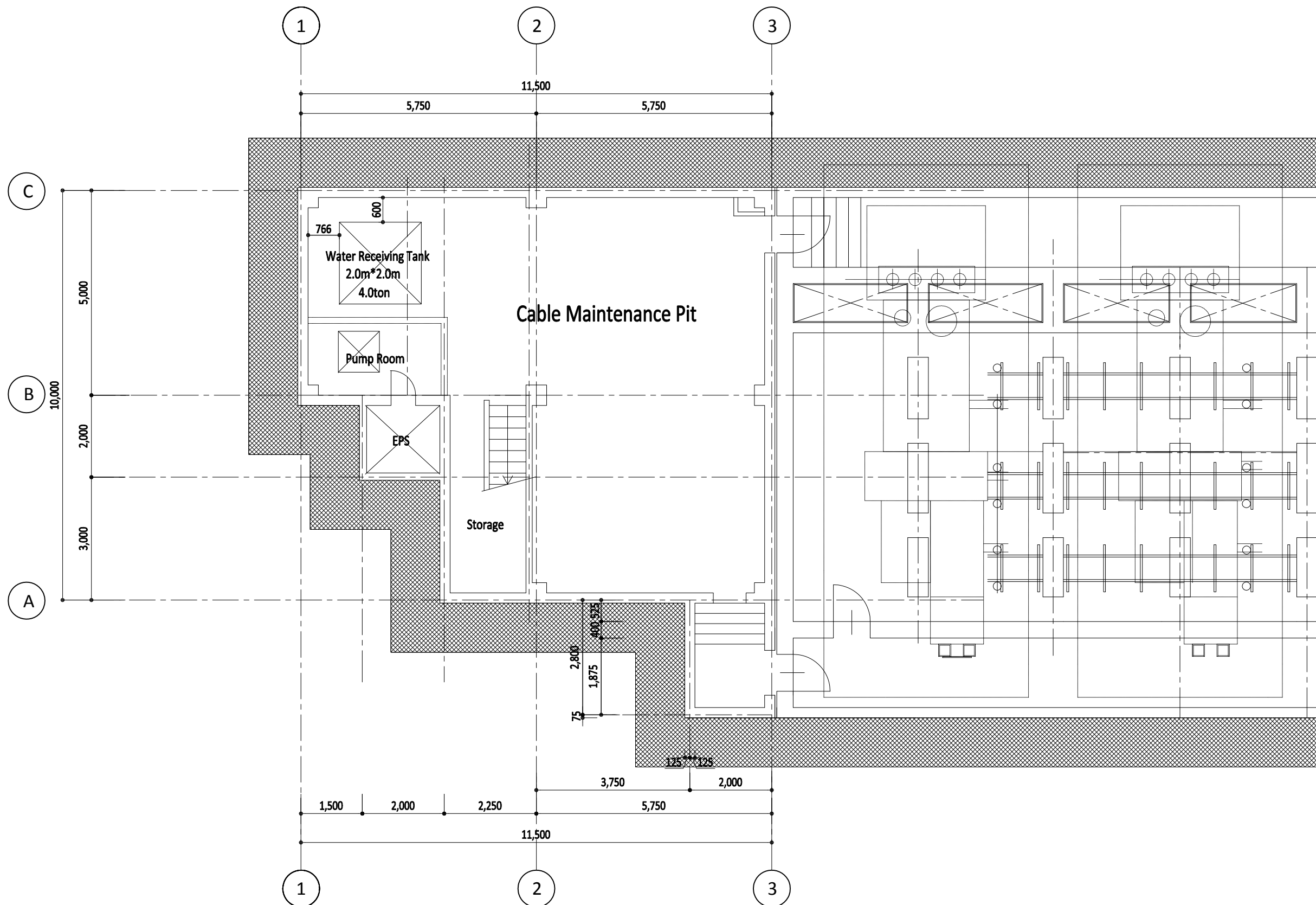
T-02 鉄塔外形図(1)懸垂型(XX)
 T-02 OUTLINE OF TOWER(1) SUSPENSION TYPE(XX)



T-02 鉄塔外形図(2)耐張型(Y Y)
T-02 OUTLINE OF TOWER(2) TENTION TYPE(Y Y)

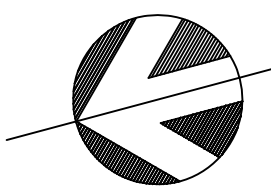
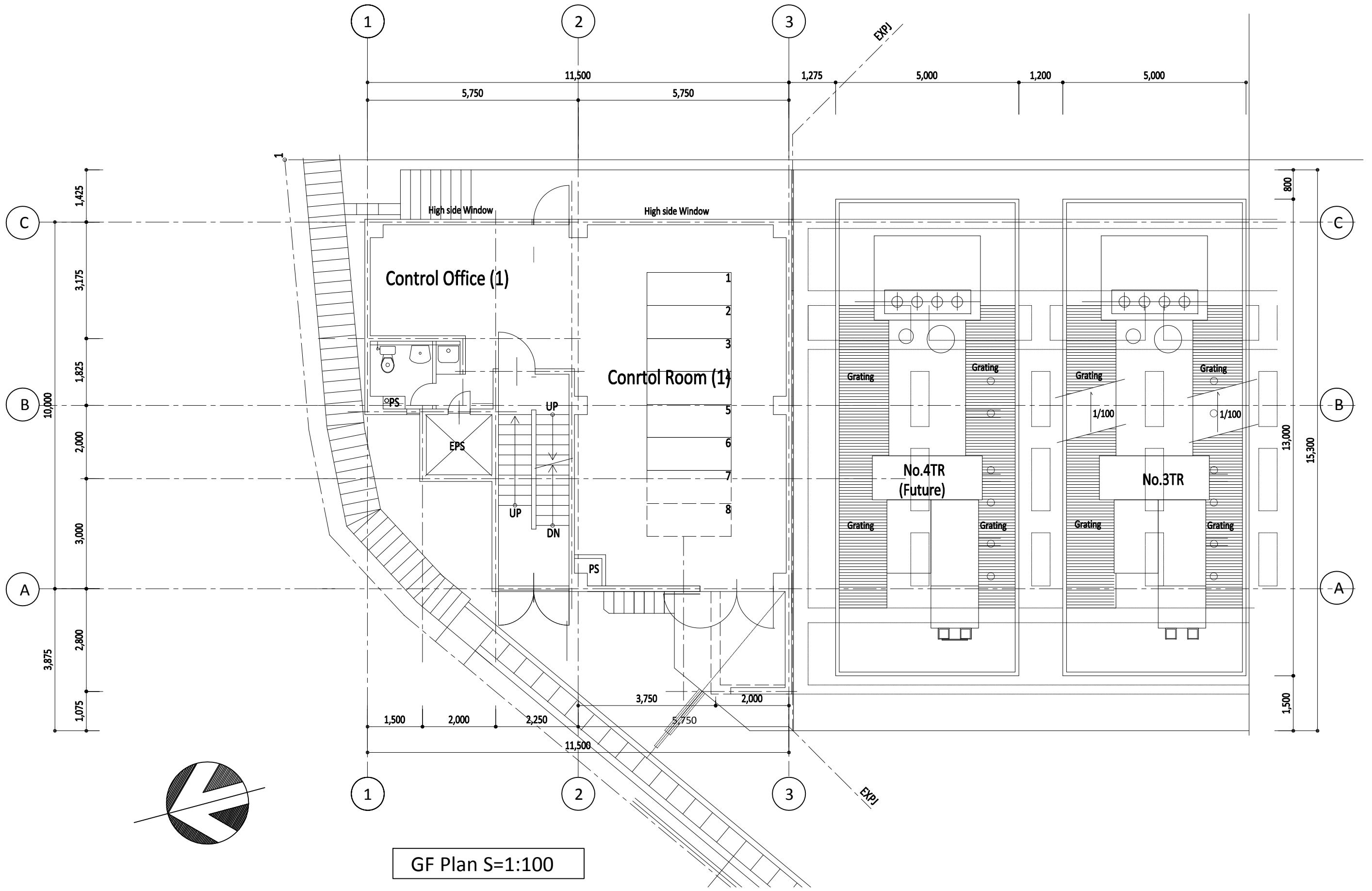


T-02 鉄塔外形図(3)ケーブル引留型(ZZ)
 T-02 OUTLINE OF TOWER(3)CABLE TERMINATION TYPE(ZZ)



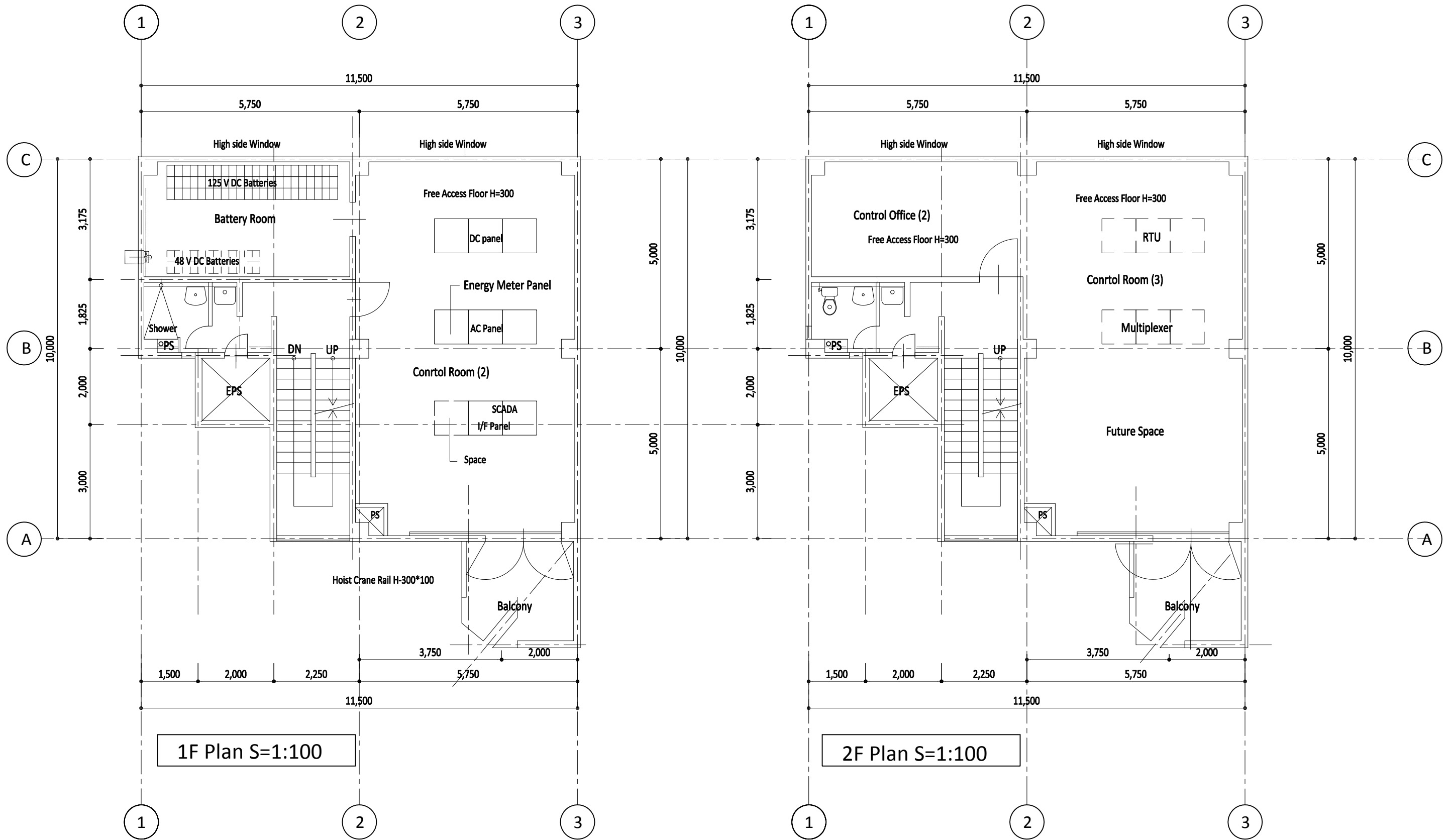
BF Plan S=1:100

Title	1:100
	DWG. No.
制御棟 地階平面図	A-04

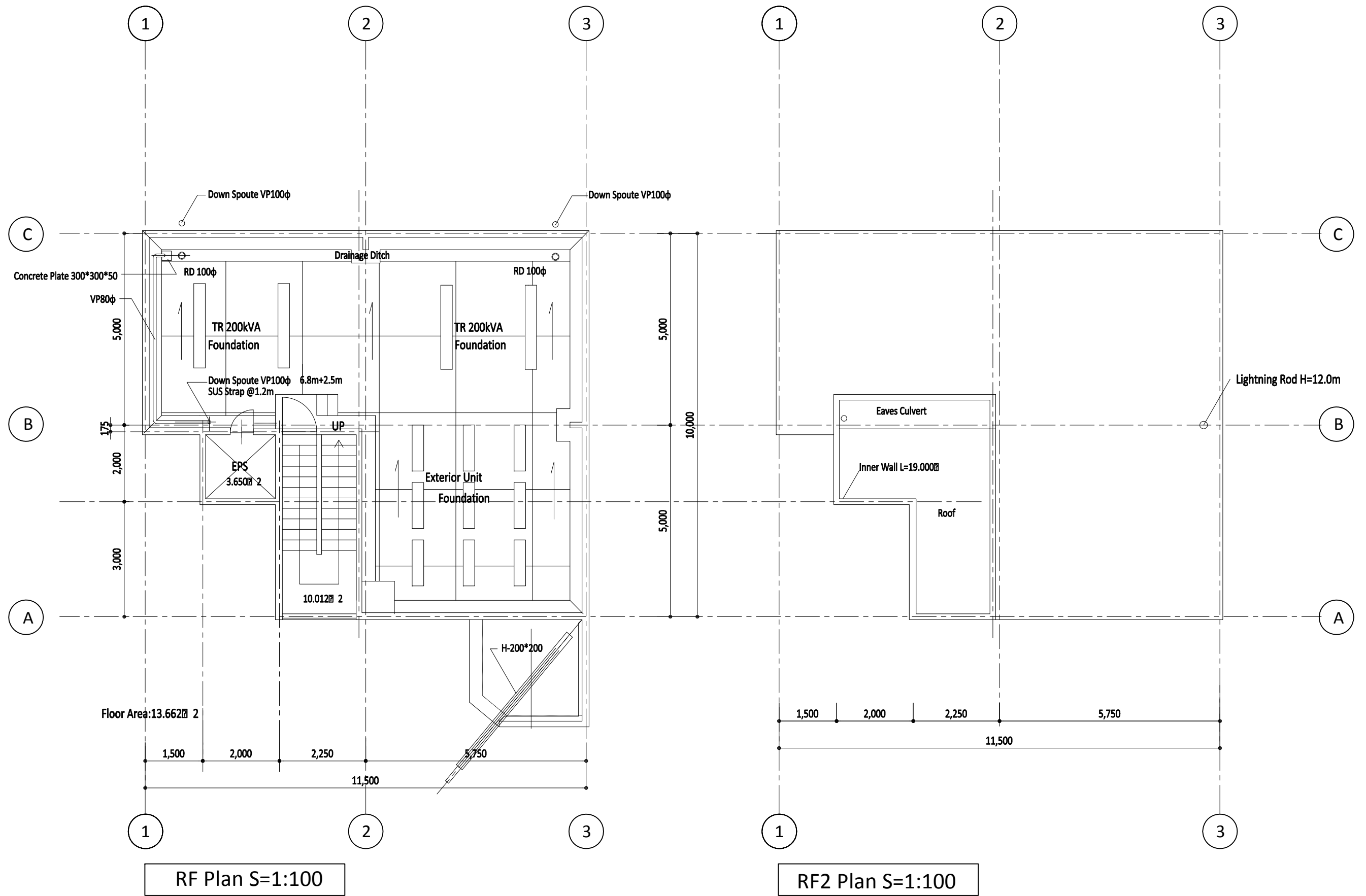


GF Plan S=1:100

Title	1:100
	DWG. No.
制御棟 平面図(1階)	A-05



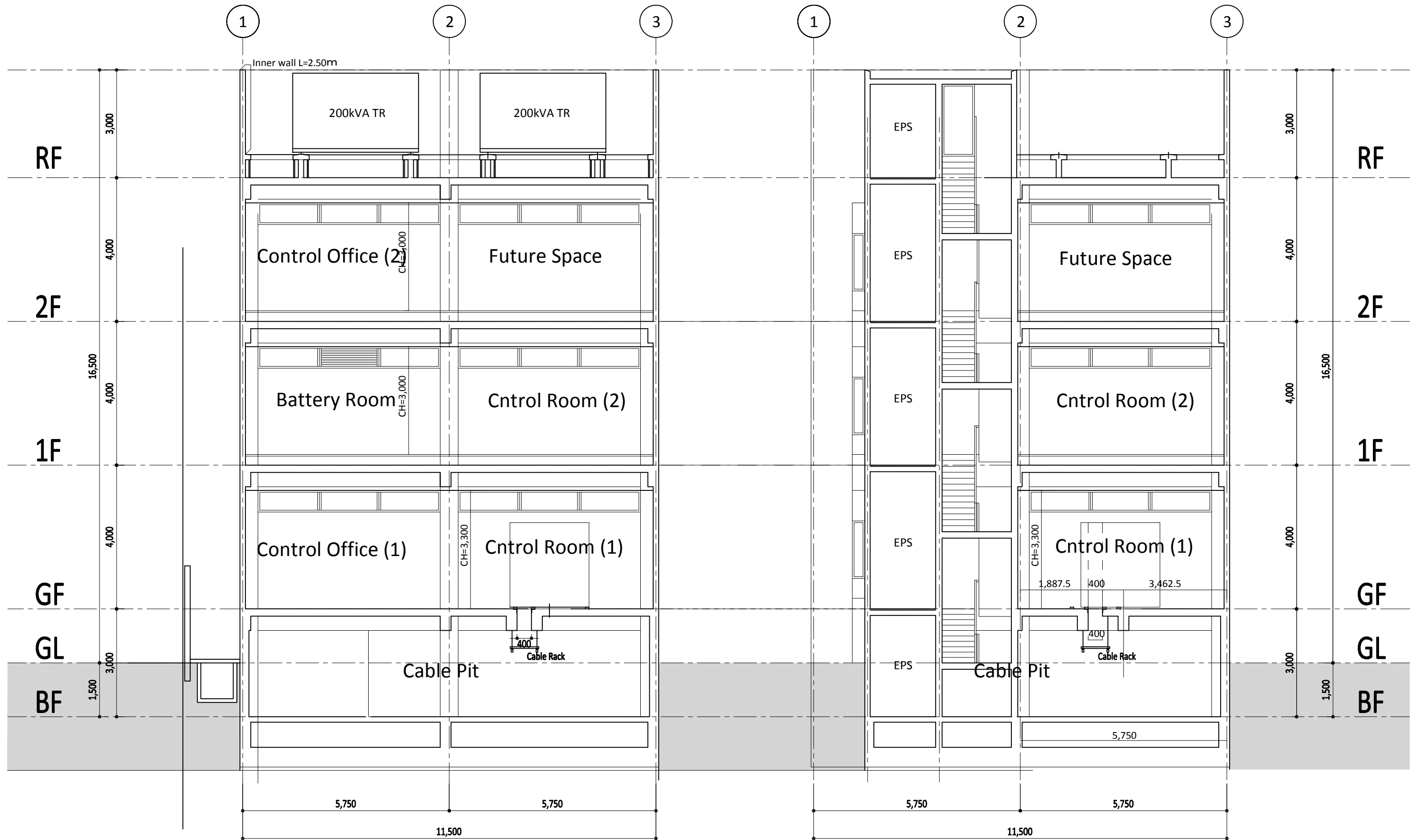
Title	1:100
	DWG. No.
制御棟 平面図(2階, 3階)	A-06



RF Plan S=1:100

RF2 Plan S=1:100

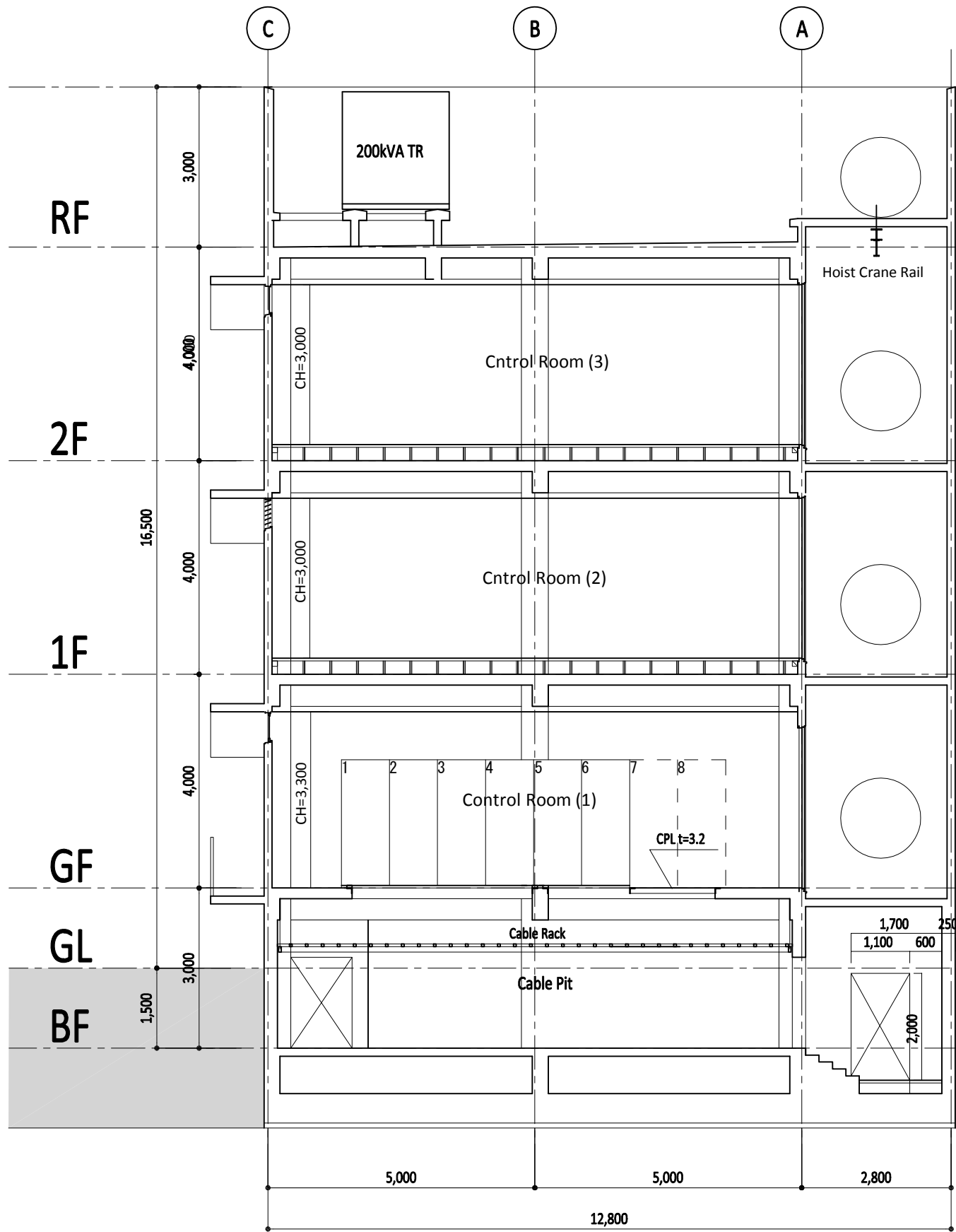
Title	1:100
	DWG. No.
制御棟 屋上平面図、屋根伏図	A-07



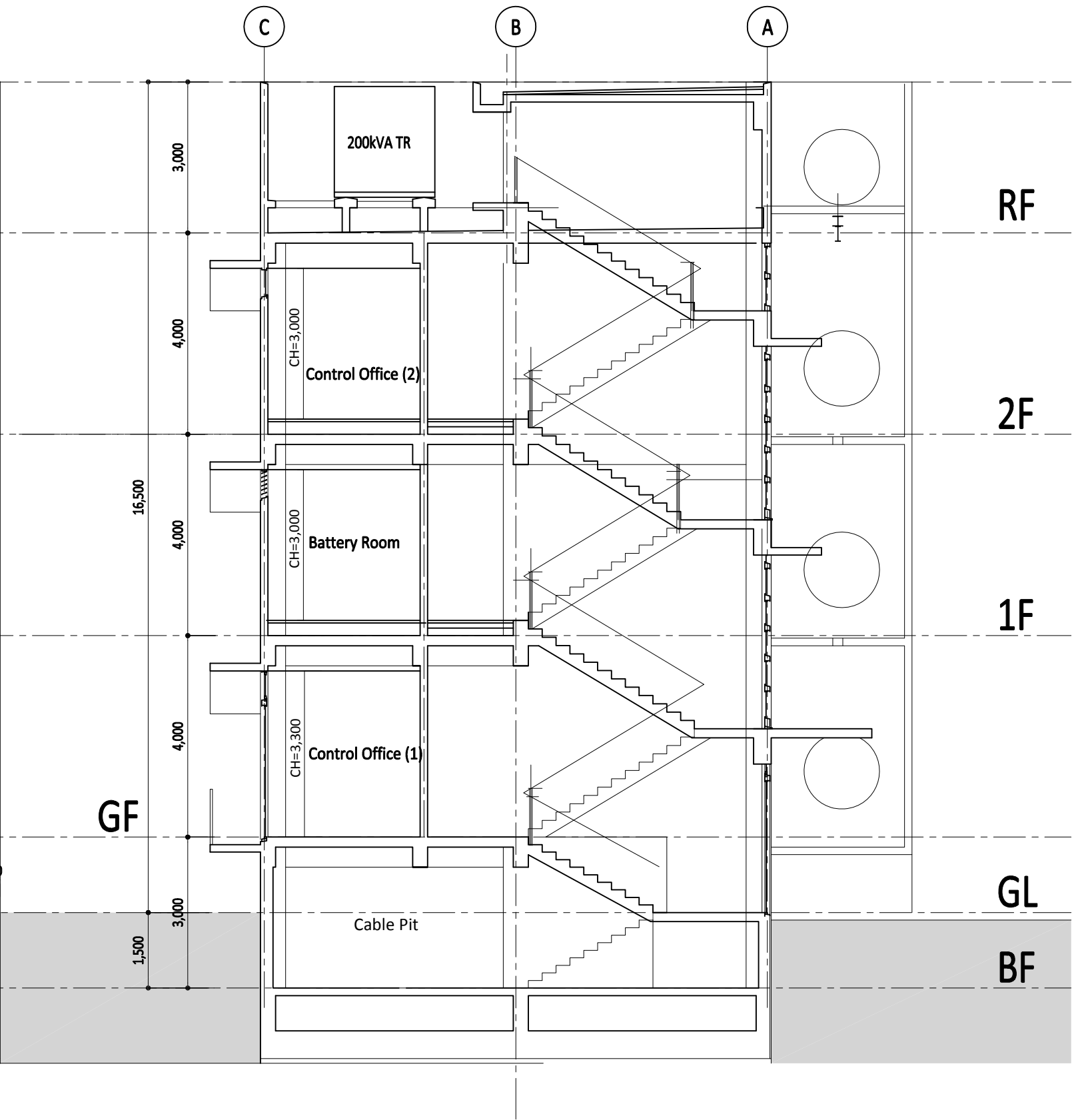
North-South Section 1 S=1:100

North-South Section 2 S=1:100

Title	1:100
	DWG. No.
制御棟 断面図(1)	A-08

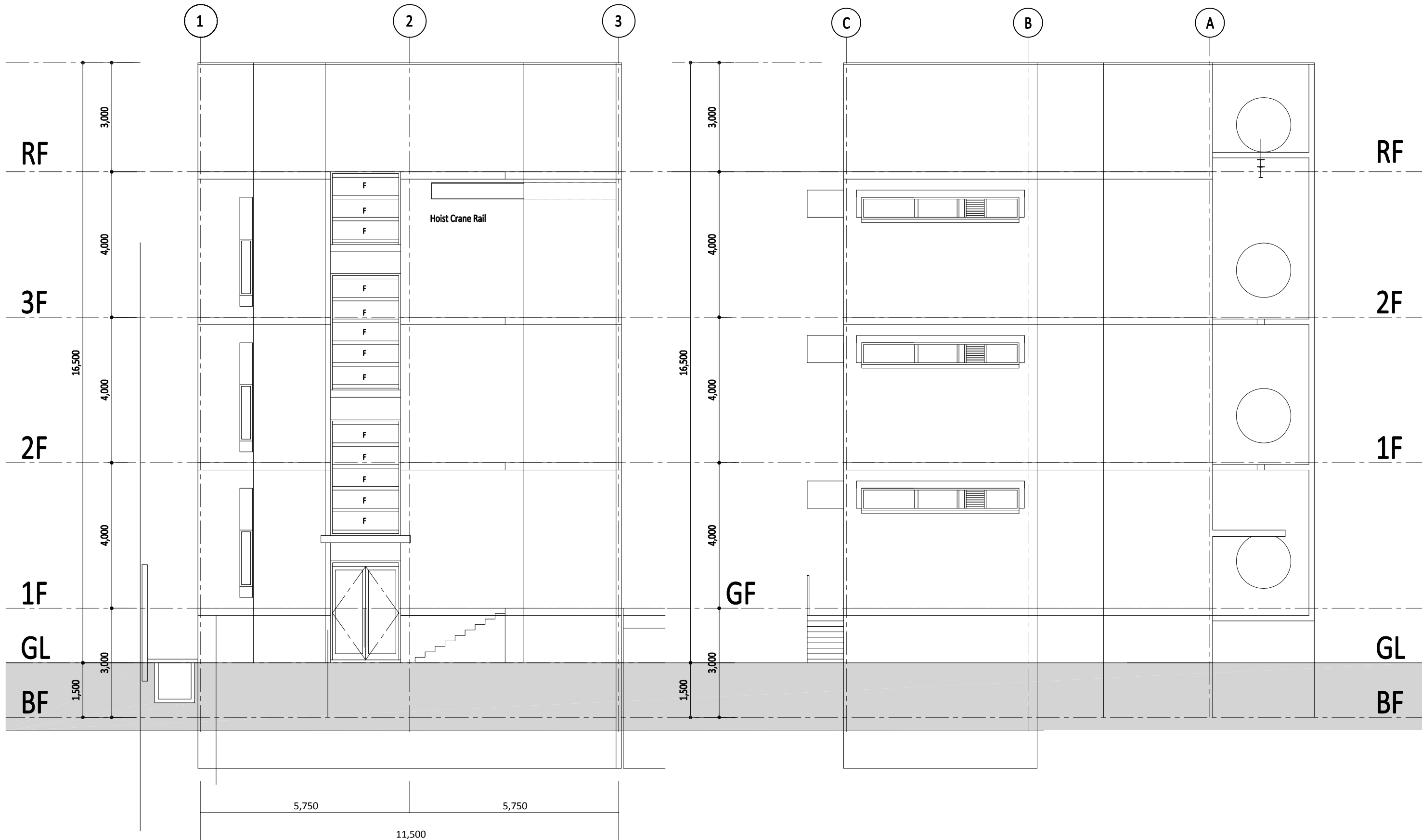


East-West Section 1 S=1:100



East-West Section 2 S=1:100

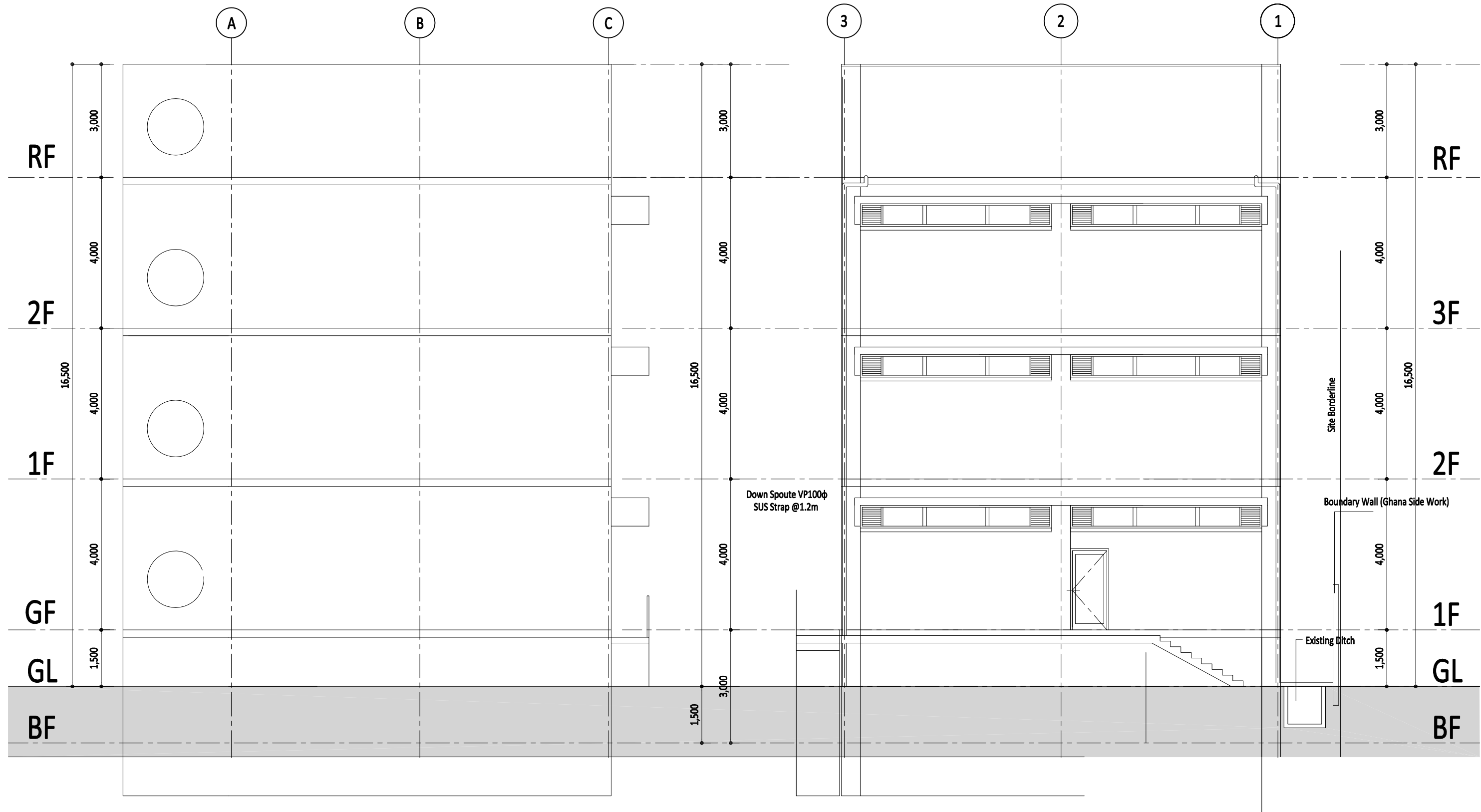
Title	1:100
	DWG. No.
制御棟 断面図(2)	A-09



West Elevation S=1:100

North Elevation S=1:100

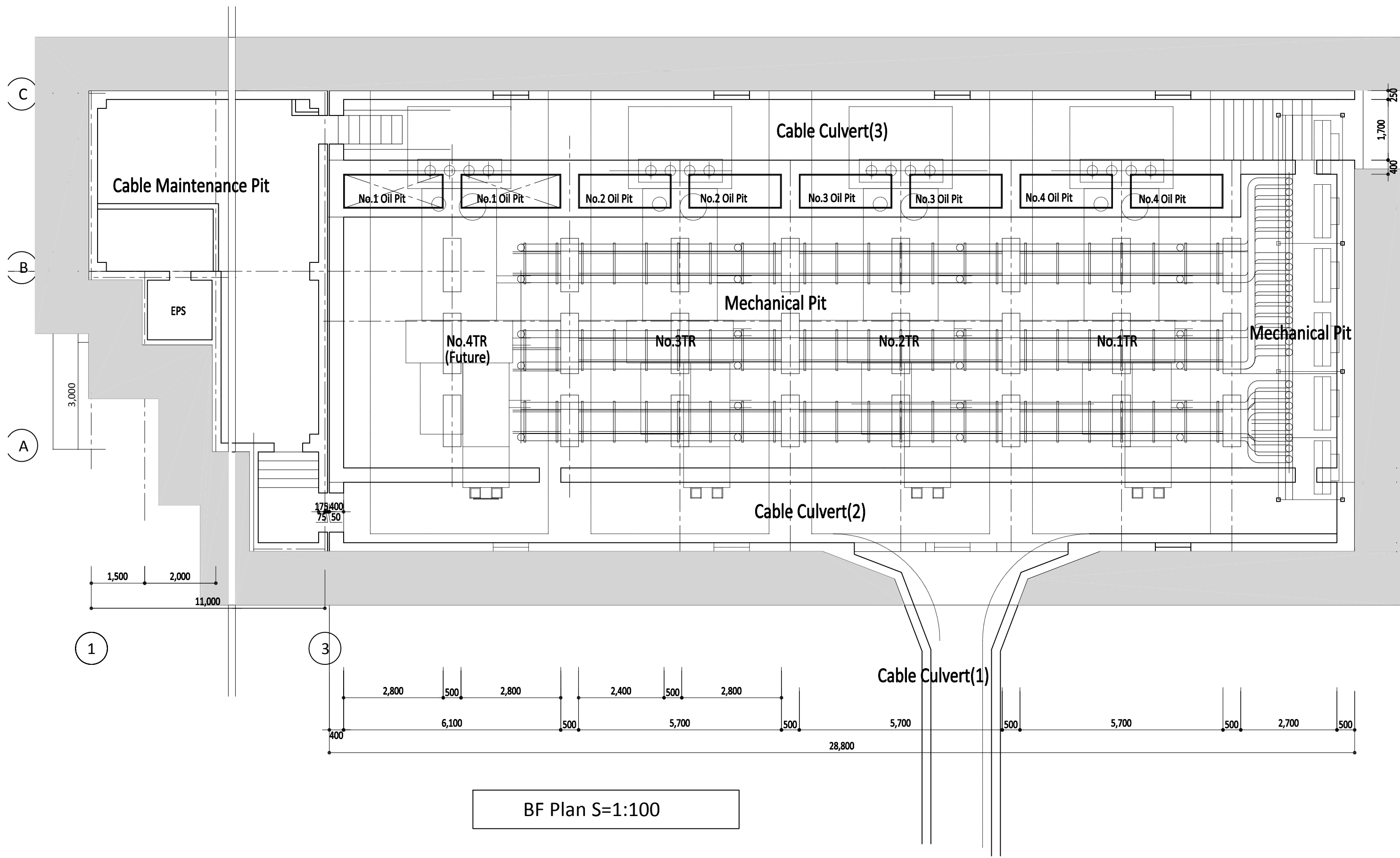
Title	1:100
	DWG. No.
制御棟 立面図(1)	A-10



South Elevation S=1:100

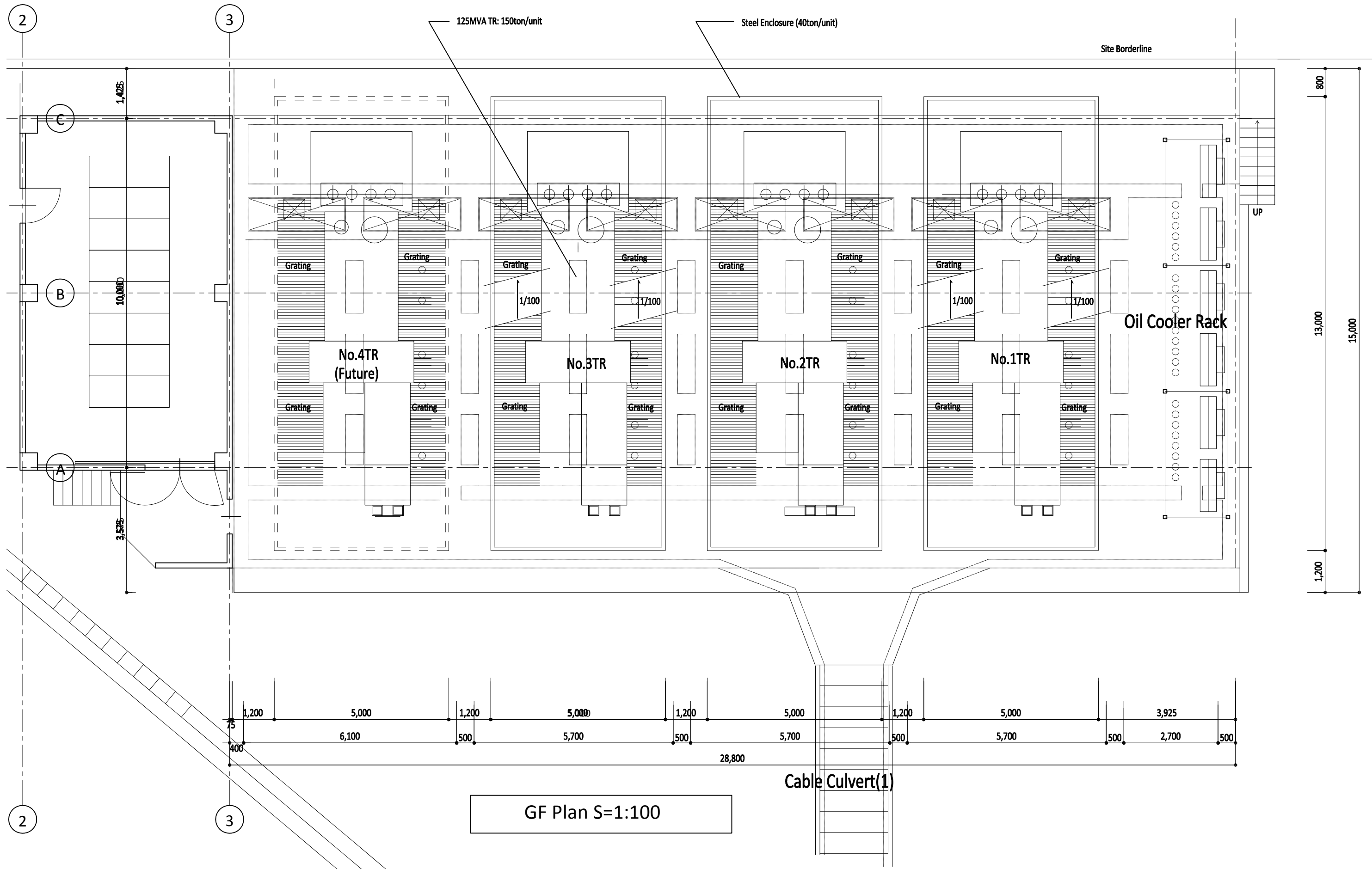
East Elevation S=1:100

Title	1:100
	DWG. No.
制御棟 立面図(2)	A-11

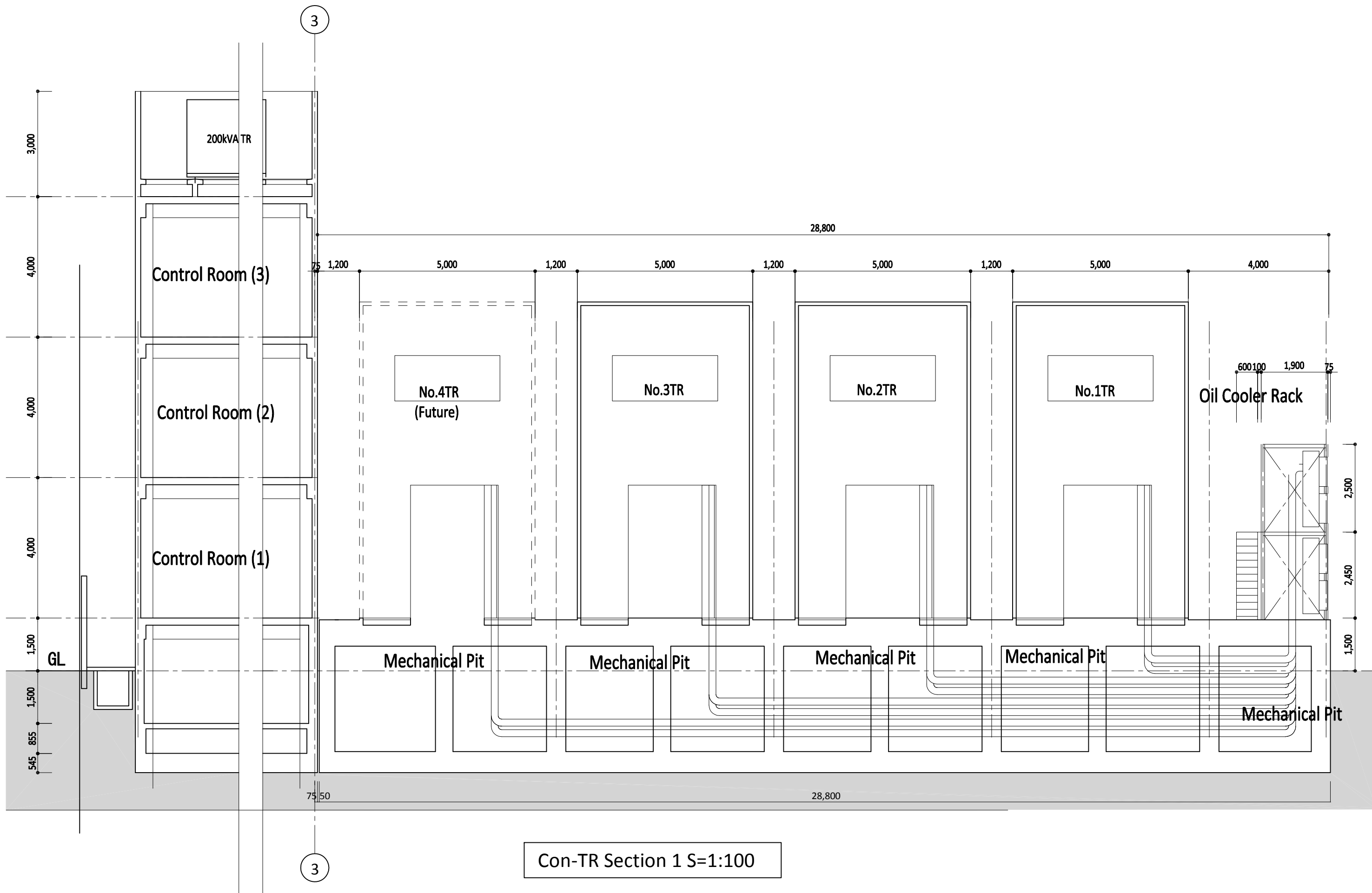


BF Plan S=1:100

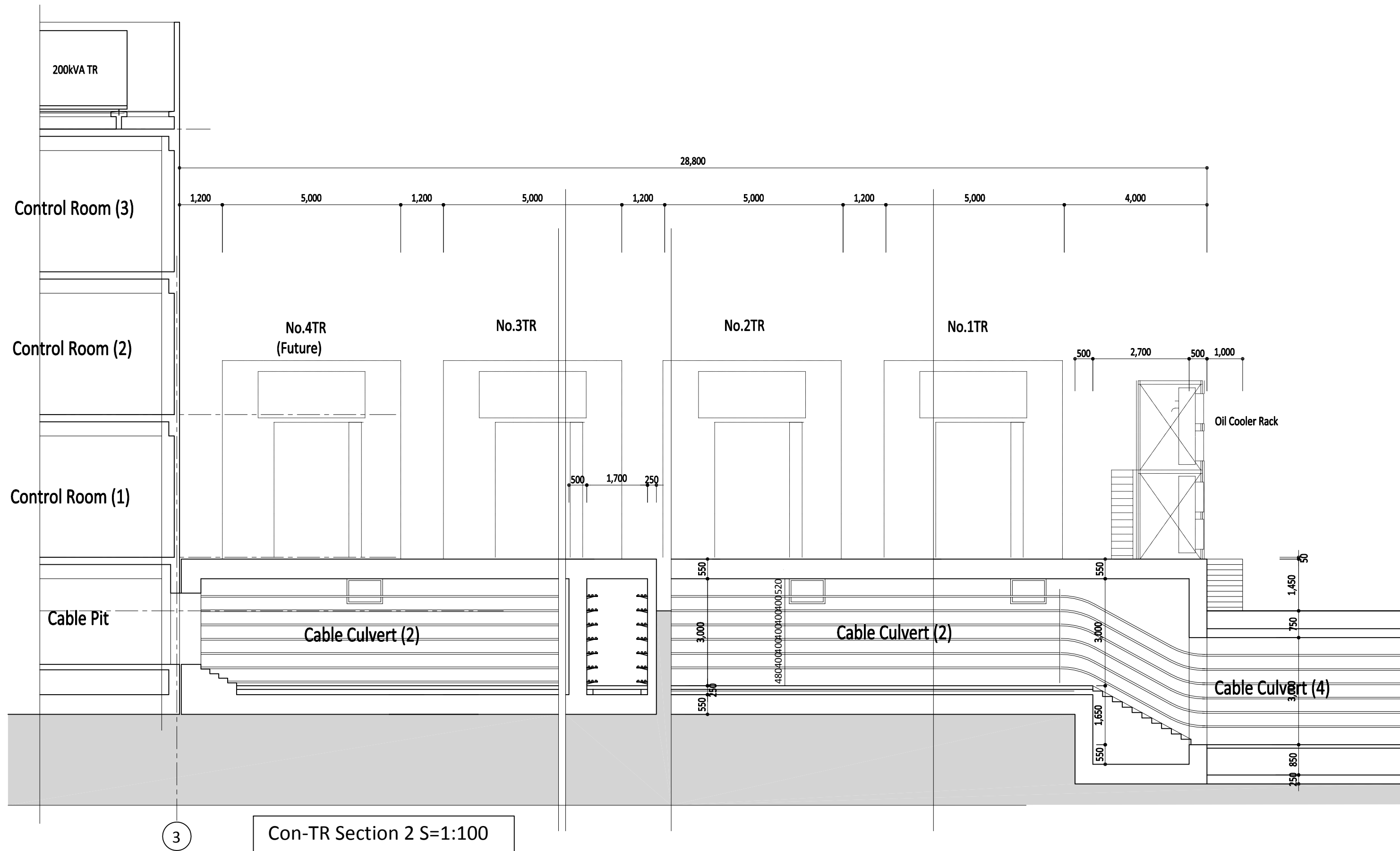
Title	1:100
	DWG. No.
変圧器基礎架台 地階平面図	A-12



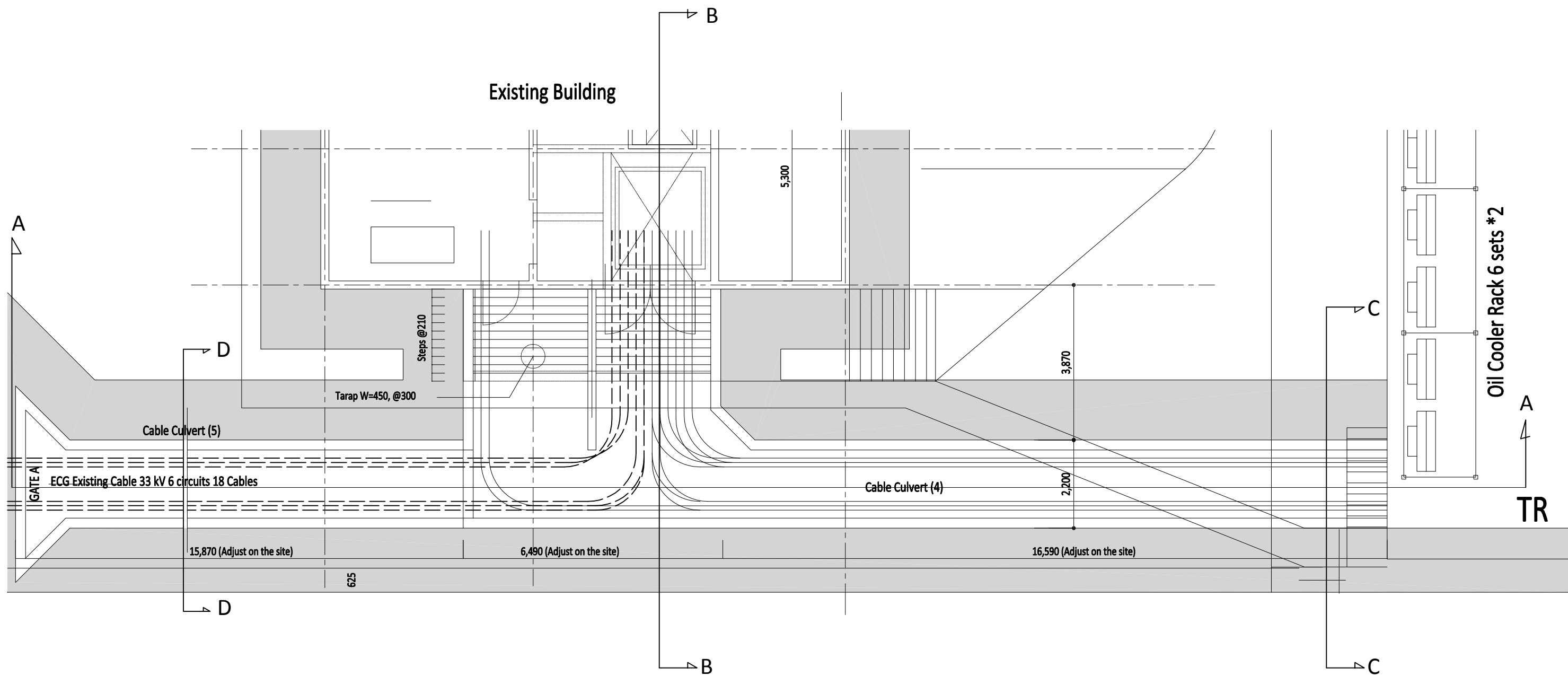
Title	1:100
	DWG. No.
変圧器基礎架台 平面図(1階)	A-13



Title		1:100
変圧器基礎架台 断面図(1)		DWG. No.
		A-14

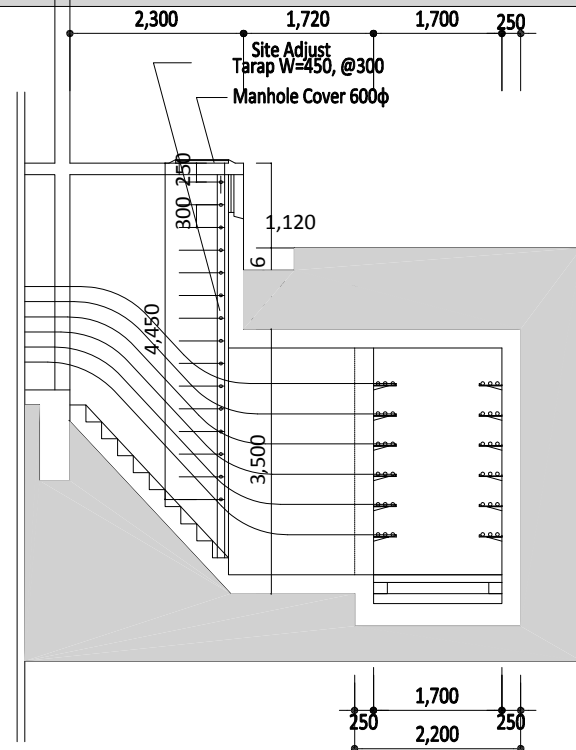
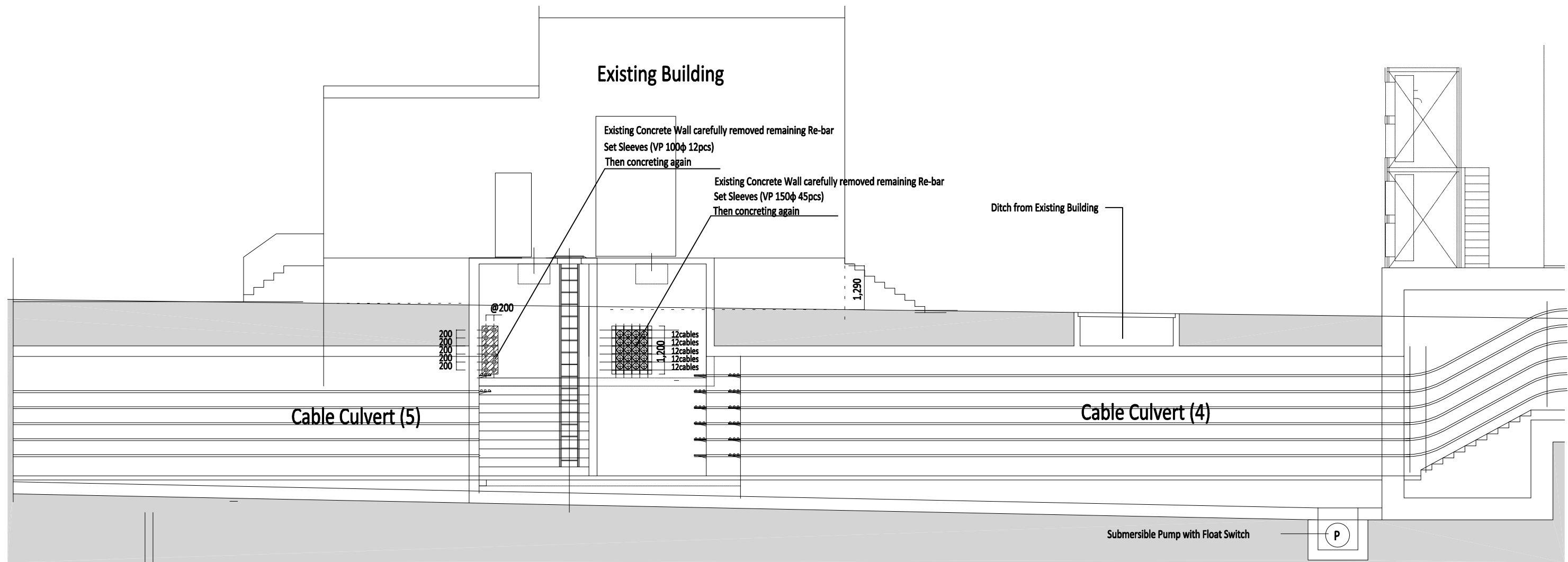


Title	1:100
	DWG. No.
变压器基础架台 断面图(2)	A-15



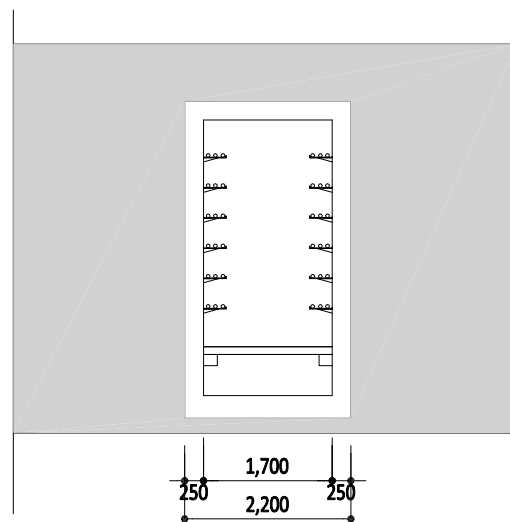
Cable Culvert (4) Plan S=1:100

Title	1:100
	DWG. No.
配線暗渠(4) 平面図	A-16

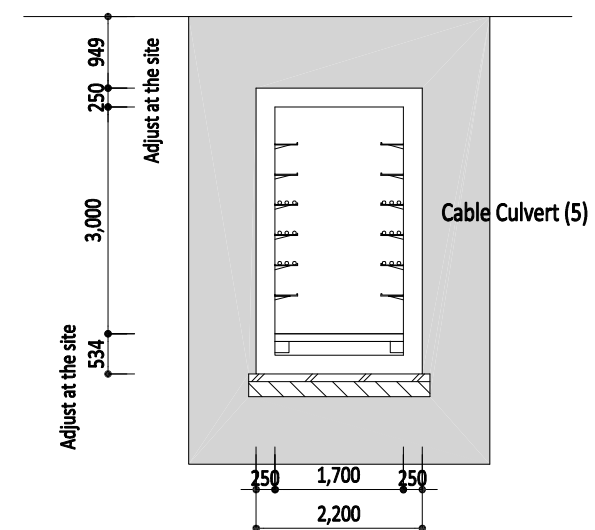


B-B Section S=1:100

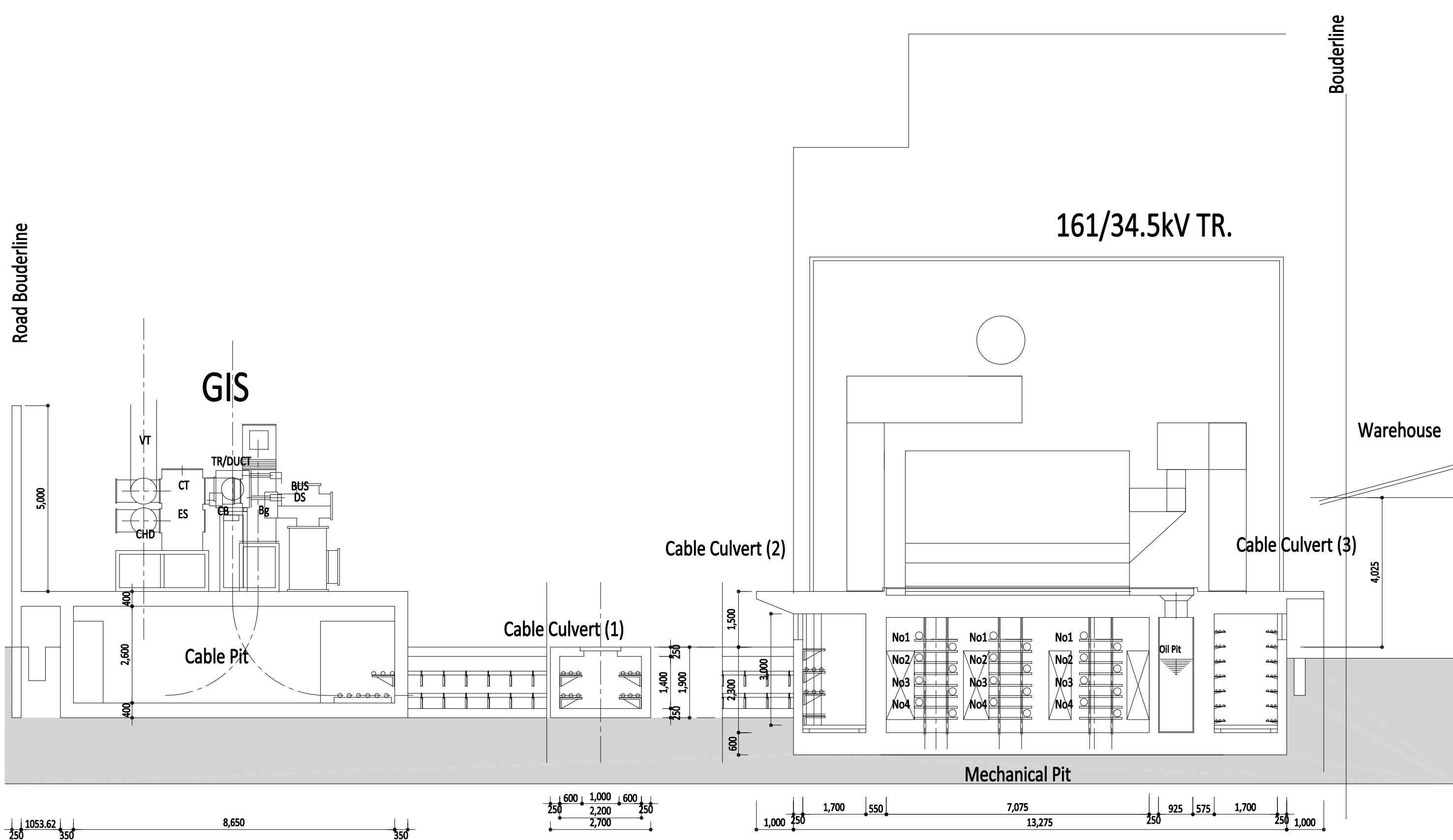
Cable Culvert (4) A-A Section S=1:100



C-C Section S=1:100

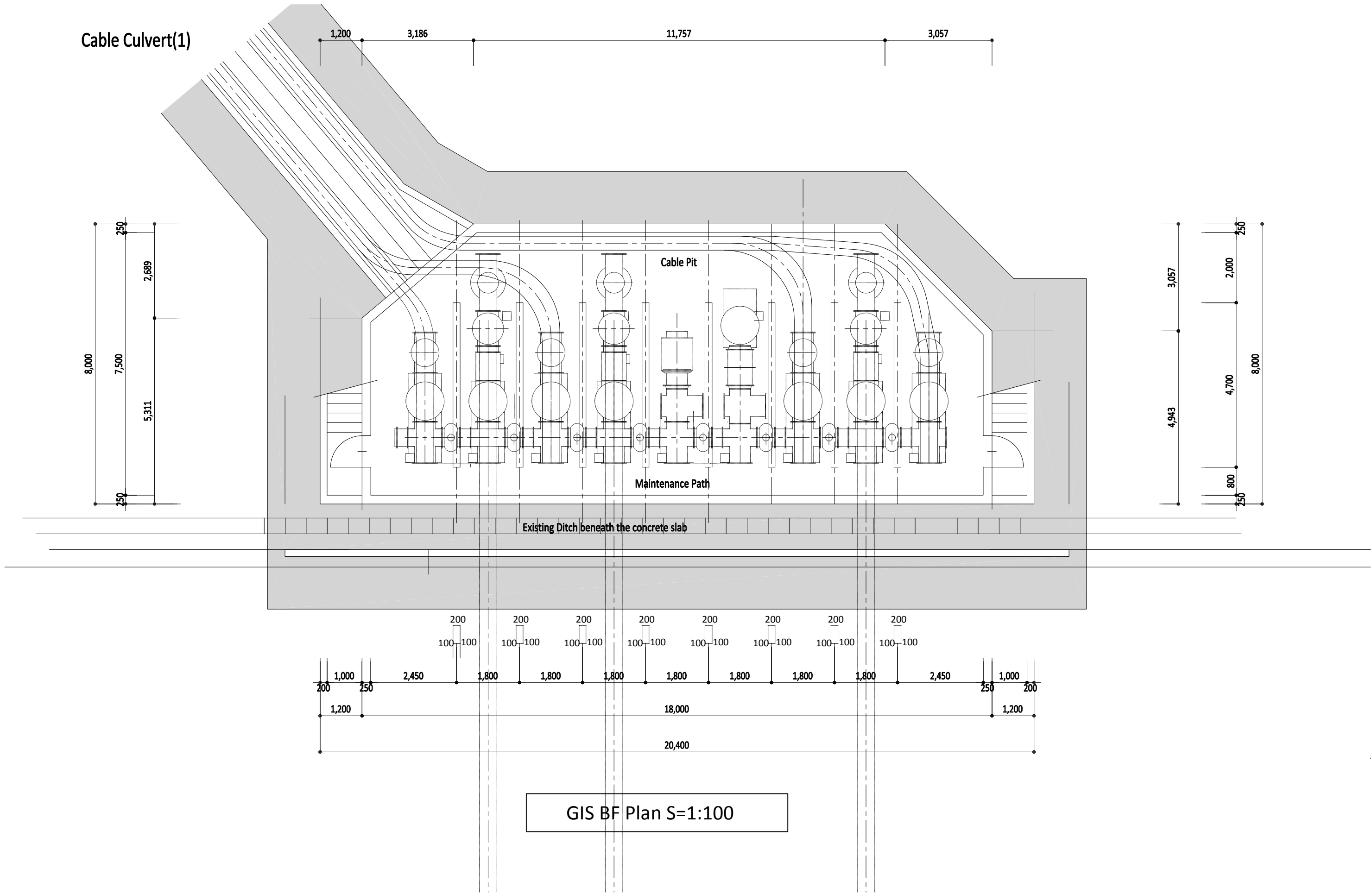


D-D Section S=1:100



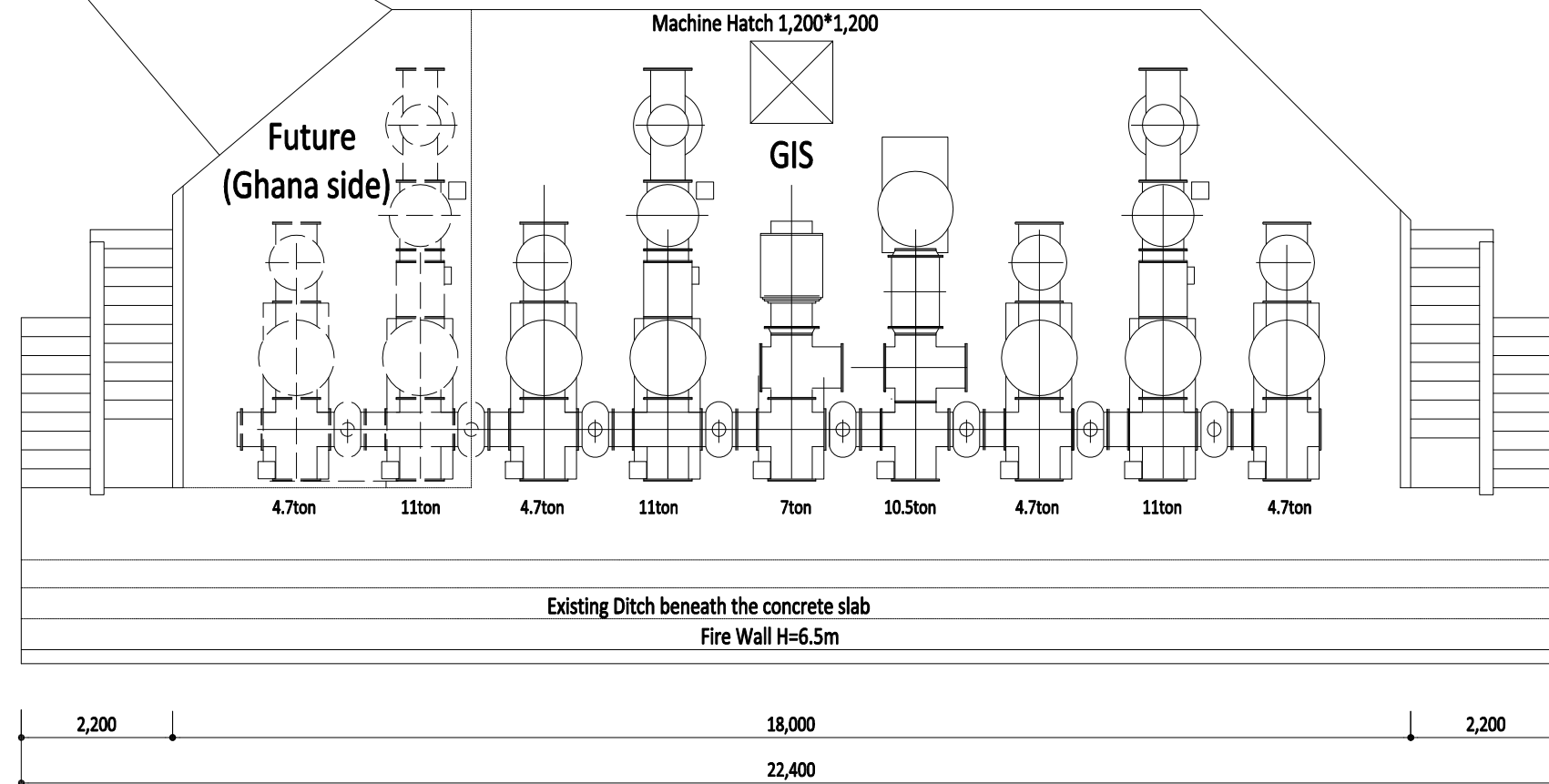
GIS-TR Section S=1:100

Cable Culvert(1)



GIS BF Plan S=1:100

Title	1:100
	DWG. No.
GIS 地階 平面図	
A-19	



GIS GF Plan S=1:100

Title	1:100
	DWG. No.
GIS 平面図	A-20