

添付資料

添付資料：

添付資料 - 1

調査団員の構成

(1) 基本設計調査

氏名	担当業務	所属
雲見昌弘	団長、総括	国際協力事業団タンザニア事務所所長
中沢哉	コーディネータ	国際協力事業団関西支部
小池仁	送配電計画	(株)EPDCインターナショナル
野口久弥	送配電設備	(株)EPDCインターナショナル

(2) 報告書原案の現地説明

氏名	担当業務	所属
筒井昇	団長、総括	国際協力事業団タンザニア事務所次長
小池仁	送配電計画	(株)EPDCインターナショナル
野口久弥	送配電設備	(株)EPDCインターナショナル

添付資料 - 2

調査日程

日数	月日	曜日	訪問先・調査内容
1	3/20	水	成田 → チューリッヒ (SR167)
2	21	木	チューリッヒ発 (SR292)
3	22	金	ダルエスサラーム着 JICA訪問：行動予定説明 TANESCO訪問：インセプションレポートにより調査目的、予定を説明
4	23	土	TANESCOとの第一回協議 インセプションレポート説明、質問状提出、カウンターパート選任依頼
5	24	日	団内打ち合せ
6	25	月	現地調査：Ilala, Oysterbay, City Center変電所
7	26	火	現地調査：Ubungo給電指令所
8	27	水	現地調査：新設変電所サイト、送電線ルート
9	28	木	大使館訪問 TANESCOとの第二回協議：質問状に対する回答書及び説明受け、追加データ要請 送電線系統の構成（案）提示
10	29	金	イースターホリデー 資料整理
11	30	土	" "
12	31	日	" "
13	4/1	月	" "
14	2	火	現地調査：既設変電所負荷状況調査 Factory Zone III S/S, Factory Zone I S/S, Ubungo S/S, Ubungo Diesel P/S, Mikocheni S/S, Oysterbay S/S

日数	月日	曜日	訪問先・調査内容
15	3	水	現地調査：新設変電所サイト、送電線ルート 電圧測定器の取り付け
16	4	木	現地調査：City Center S/S, Kurasini S/S, Ilala S/S, Factory Zone 1 S/S
17	5	金	TANESCOとの第三回協議：系統構成、変電所レイアウ ト、用地取得関係
18	6	土	JICA団員（中沢氏）到着 資料整理
19	7	日	現地調査：深夜の潮流状況調査
20	8	月	TANESCOとの第四回協議：無償協力の仕組み説明、 Minutesドラフト提示し説明、車両及び工具の種類・ 数量、線路用材料、ストックヤード、実施方法等に つき協議 大使館表敬訪問 TANESCO主催のディナーパーティー
21	9	火	TANESCOとの第五回協議：力率改善用コンデンサ設置 の妥当性、変電所用敷地及び機器配置、追加データ 提出依頼
22	10	水	TANESCOとの第六回協議：11kVスイッチギヤ取り替え に関する協議、工事分担 Minutes最終原稿作成
23	11	木	11kVスイッチギヤ取り替え要請状受取 JICA(HQ)に連絡し了承取る 現地調査：全変電所の11kVスイッチギヤ及び関連ケー ブル 確認事項整理

日数	月日	曜日	訪問先・調査内容
24	12	金	TANESCOとの最終協議 Minutes調印 大使館への帰国挨拶 JICA主催カクテルパーティ
25	13	土	大蔵省、水エネルギー省表敬訪問
26	14	日	資料整理
27	15	月	TANESCOへの帰国挨拶 電圧測定器取り外し 帰国準備
28	16	火	ダルエスサラーム → チューリッヒ (SR293)
29	17	水	チューリッヒ発 (SR166)
30	18	木	成田着

面会者リスト

機 関 名	氏 名	役 職 ・ 所 属
日本大使館	永井重信 今井治 斉藤幸司	特命全権大使 参事官
国際協力事業団 (JICA)	雲見昌弘 筒井昇 勝田幸秀 本村洋	タンザニア事務所、所長 タンザニア事務所、次長 タンザニア事務所、次長 タンザニア事務所、調整員
大蔵省 (Treasury)	Muneni L. Lungu	Ag. Commissioner for External Finance Senior Finance Management Officer
水エネルギー鉱山省 (Ministry of Water, Energy and Minerals)	M. Mwandosya P. Victus	Principal Secretary Ag. Commissioner for Energy and Petroleum
タンザニア電力公社 (TANESCO : Tanzania Electric Supply Company Limited)	S.L. Mosha S.L. Mhaville S.T. Kimaryo	Managing Director Deputy Managing Director (Operations) Deputy Managing Director (Technical Services)

機 関 名	氏 名	役 職 ・ 所 属
タンザニア電力公社 (TANESCO : Tanzania Electric Supply Company Limited)	K.K. Iranga	Director, System Control and Transmission
	Luhanga	Director, Corporate Service
	Mwenisongole	Director, Finance
	D.S. Magambo	Zonal Director, Coastal
	M.M. Fazal	Manager, Light and Heavy Current Workshop
	Mbwatila	Head of ESMAP Team
	Safisha	Project Superintendent
	M.A.I. Mkasa	Senior Transport Officer
	C.J. Masasi	Distribution Engineer
	M.S. Masanja	Company Secretary
	M.A. Salehe	Manager, System Control
D. Mshana	Principal Public Relations	

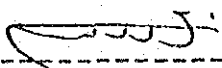
MINUTES OF DISCUSSIONS
THE BASIC DESIGN STUDY ON THE PROJECT FOR
THE REINFORCEMENT OF POWER DISTRIBUTION NETWORK
IN DAR ES SALAAM - PHASE III

In response to the request of the Government of the United Republic of Tanzania, the Government of Japan decided to conduct a Basic Design study on the Project for the Reinforcement of Power Distribution Network in Dar es Salaam - Phase III (hereinafter referred to as "the Project"), and the Japan International Cooperation Agency (hereinafter referred to as "JICA") sent the study team, headed by Mr. Masahiro Kumomi, Resident Representative, JICA Tanzania Office to the United Republic of Tanzania, from March 20th to April 18th, 1991.


The team had a series of discussions with the authorities concerned of the Government of the United Republic of Tanzania and conducted a field survey in the Project sites.

As the result of the discussions and field survey, both parties confirmed the main items described on the attached sheets. The team will proceed the works and prepare the Basic Design Study Report on the Project based on the items.

Dar es Salaam, April 12th, 1991

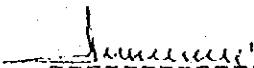


Mr. M. Kumomi
Leader
Basic Design Study Team



Mr. S. L. Mosh
Managing Director
Tanzania Electric
Supply Co., Ltd.

Endorsed by



M. T. Kibwana
Commissioner for External Finance
Ministry of Finance
Economic Affairs and Planning

ATTACHMENT

1. Objective

The objective of the Project is to improve the reliability of electric power supply in Dar es Salaam through the construction of new substations as well as the provision of equipment for those substations such as transmission and distribution lines.

2. Project Sites

The Project sites are located at the substations such as Ilala, City Center, Oysterbay, Factory Zone I and their supply zone in the city central area of Dar es Salaam including Msasani Peninsula which appear in Annex-1.

3. Executing Agency

Tanzania Electric Supply Company Limited (TANESCO) is responsible for the administration and execution of the Project.

4. Necessary Items for the Implementation of the Project requested by the Government of the United Republic of Tanzania

After discussions between the Basic Design Team and TANESCO, the following items were judged necessary for the realization of the Project.

- (1) Construction of new substations
 - a) Sokoine substation : 33/11kV, 15MVA
 - b) Msasani substation : 33/11kV, 15MVA
- (2) Provision of materials for 33kV and 11kV transmission and distribution lines in relation to the new substations
 - a) Sokoine substation line : 33kV, 2km
 - b) Msasani substation line : 33kV, 6km
 - c) Distribution lines : 11kV, 20km
 - d) Branch lines and others
- (3) Provision of new transformers : 33/11kV, 15MVA
- (4) Provision of new 11kV switch gears and related cables for existing substations shown in Item 2 above.
- (5) Provision of vehicles, instruments and tools necessary for construction works

However, the final components of the Project may differ from the above items, if it is judged necessary after further studies in Japan.

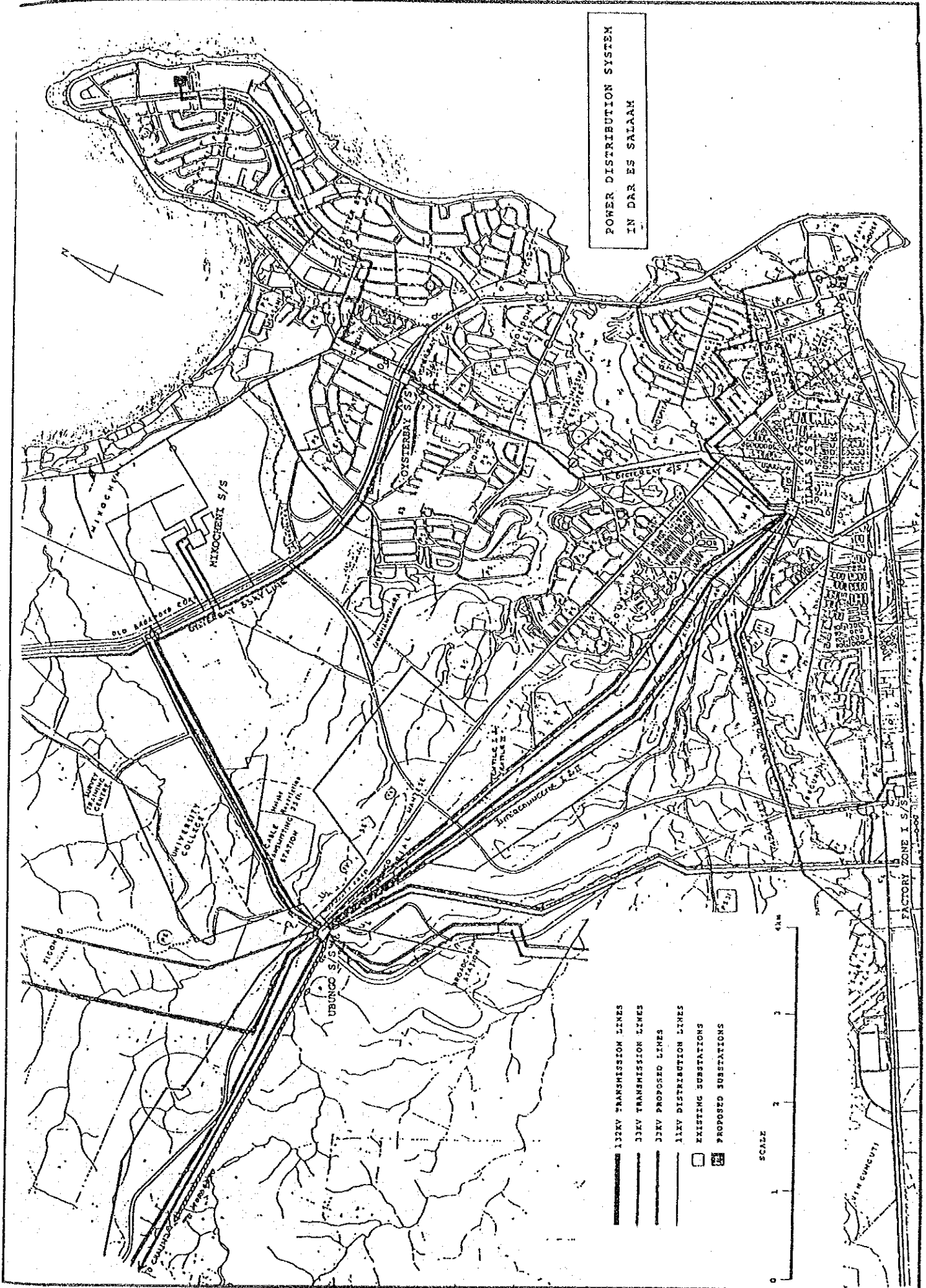
5. Grant Aid Program extended by the Government of Japan

- (1) The Government of the United Republic of Tanzania has understood the system of Japanese Grant Aid explained by the Team.
- (2) The Government of the United Republic of Tanzania will take necessary measures, described in Annex-2, for smooth implementation of the Project on condition that the Grant Aid Assistance by the Government of Japan is extended to the Project.

6. Schedule of Study

- (1) JICA will prepare the draft report in English and dispatch a mission in order to explain the contents of the report around July, 1991.
- (2) In case that the contents of the report is accepted in principle by Tanzania Electric Supply Company Limited, JICA will complete Final Report and send it to the Government of the United Republic of Tanzania by September, 1991.

POWER DISTRIBUTION SYSTEM
IN DAR ES SALAAM



Annex-2 UNDERTAKINGS BY THE GOVERNMENT OF
THE UNITED REPUBLIC OF TANZANIA

1. To provide cleared, embanked and leveled land for the Project.
2. To provide all the foundations of substation equipment.
3. To provide the land for temporary site office, warehouse and stockyard during the implementation period for the Japanese contractor(s).
4. To ensure speedy unloading, tax exemption, customs clearance of the goods for the Project at the port and/or airport of disembarkation.
5. To accord Japanese nationals whose services may be required in connection with the supply of the products and services under the verified contracts such facilities as may be necessary for their entry into the United Republic of Tanzania and stay therein for the performance of their work.
6. To exempt Japanese nationals from customs duties, internal taxes and other fiscal levies which may be imposed in the United Republic of Tanzania with respect to the supply of the products and services under the verified contracts.
7. To bear commissions to a Japanese foreign exchange bank for the banking services based upon the Banking Arrangement.
8. To bear all expenses, other than those to be borne by the Grant Aid necessary for the execution of the Project.
9. To provide proper arrangements for the construction, such as water supply, electricity, drainage, etc., if necessary.
10. To assign full time counterpart engineers/technicians to the Project who will receive the technical transfer regarding the operation and maintenance technique for the Project.
11. To take necessary measures and responsibility for the switching arrangements and safety procedures at the working sites during a construction period when it is necessary.

MINUTES OF DISCUSSIONS
THE BASIC DESIGN STUDY ON THE PROJECT FOR
THE REINFORCEMENT OF POWER DISTRIBUTION NETWORK
IN DAR ES SALAAM-PHASE III
(CONSULTATION ON DRAFT REPORT)

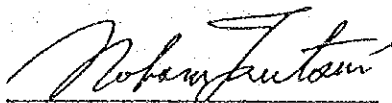
In April 1991, the Japan International Cooperation Agency (JICA) dispatched a Basic Design Study team on the Project for the Reinforcement of Power Distribution Network in Dar es Salaam (hereinafter referred to as "the Project") to the United Republic of Tanzania, and has prepared the draft report of the basic design study through examining the results of the study in Japan.

In order to explain the components of the draft report to the Government of Tanzania as well as to consult with Tanzanian side on the contents of the report, JICA sent to Tanzania a study team, which is headed by Mr. Noboru Tsutsui, Deputy Resident Representative, JICA Tanzania Office.

The team commenced its study in Tanzania from July 24, and will terminate it on July 31, 1991.

As a result of discussions, both parties confirmed the main items described on the attached sheets.

Dar es Salaam, July 30, 1991

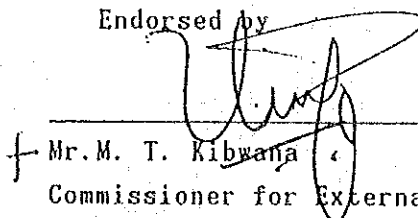


Mr. Noboru Tsutsui
Leader
Draft Report Explanation Team
JICA



Mr. S.L. Mhaville
Managing Director
Tanzania Electric Supply
Co., Ltd.

Endorsed by



Mr. M. T. Kibwana
Commissioner for External Finance
Ministry of Finance
Economic Affairs and Planning

ATTACHMENT

1. Components of Draft Report

The Government of Tanzania has agreed and accepted in principle the components of the draft report prepared by the team.

2. Japan's Grant Aid System

- (1) The Government of Tanzania has understood the system of Japan's Grant Aid including further schedule of the study explained by the team.
- (2) The Government of Tanzania will take the necessary measures, described in Annex, for smooth implementation of the Project on condition that the grant aid by the Government of Japan is extended to the Project.

3. Further Schedule of the Study

The team will make the final report in accordance with the confirmed items, and send it to the Government of Tanzania by the middle of September, 1991.

4. Operation and Maintenance for the Facilities

The Government of Tanzania stressed that it will allocate necessary budget for the works including operation and maintenance of the facilities to be constructed as well as the equipment to be procured under the Project, on condition that the grant aid by the Government of Japan is extended to the Project.

Annex-2. UNDERTAKINGS BY THE GOVERNMENT OF
THE UNITED REPUBLIC OF TANZANIA

1. To provide cleared, embanked and leveled land for the Project.
2. To provide all the foundations of substation equipment.
3. To provide the land for temporary site office, warehouse and stockyard during the implementation period for the Japanese contractor(s).
4. To ensure speedy unloading, tax exemption, customs clearance of the goods for the Project at the port and/or airport of disembarkation.
5. To accord Japanese nationals whose services may be required in connection with the supply of the products and services under the verified contracts such facilities as may be necessary for their entry into the United Republic of Tanzania and stay therein for the performance of their work.
6. To exempt Japanese nationals from customs duties, internal taxes and other fiscal levies which may be imposed in the United Republic of Tanzania with respect to the supply of the products and services under the verified contracts.
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9. To provide proper arrangements for the construction, such as water supply, electricity, drainage, etc., if necessary.
10. To assign full time counterpart engineers/technicians to the Project who will receive the technical transfer regarding the operation and maintenance technique for the Project.
11. To take necessary measures and responsibility for the switching arrangements and safety procedures at the working sites during a construction period when it is necessary.

入手資料一覧表

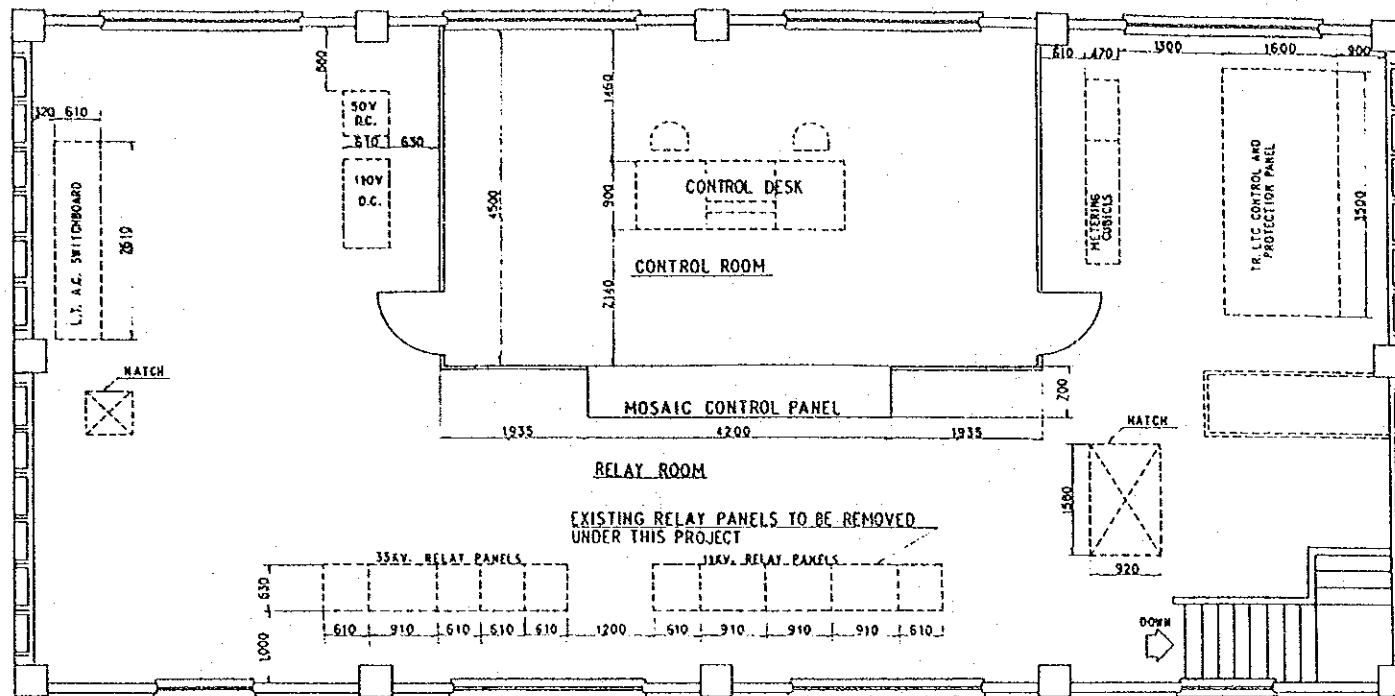
- (1) 配電線路事故統計(90.1~90.12)
- (2) ドル・シリング換算レートの推移(91.1~91.4)
- (3) TANESCOの組織図
- (4) 電気料金の推移(87年~91年)
- (5) 変電所別負荷電流値
- (6) 11kV配電線路図
- (7) ダルエスサラーム市内系統図
- (8) ダルエスサラーム全系統図
- (9) ダルエスサラーム市内の需要家数
- (10) 現地調達可能資材及び単価
- (11) 労務単価
- (12) 変電所別ピークデマンドの推移(88年~91年)
- (13) 送電線路詳細
- (14) 主要変圧器詳細
- (15) 発電設備詳細
- (16) 設備リアクター、キャパシター
- (17) 需要予想(95)
- (18) ダルエスサラーム市内33kV、11kV線路詳細
- (19) 電圧変動の要因
- (20) 電気料金表
- (21) 発電電力、販売電力
- (22) TANESCO年報(87年, 88年)
- (23) 変電機器詳細(既設設備詳細)
- (24) ESMAPレポート
- (25) 系統データ(軽負荷時、重負荷時)
- (26) トランスファークラス(88年~90年)

タンザニア国の概況

- 国名: タンザニア連合共和国 (United Republic of Tanzania)
面積: 945,048 km²
人口: 2390万人(1987)
独立: 本土は1961年2月、ザンジバルとの連合は1963年12月
首都: ダラエスラーム市
主要都市: Arusha, Dodoma, Mwanza, Tanga, Mbeya, Zanzibar
言語: 英語、スワヒリ語
政体: 行政権を持つ大統領を元首とする共和制
国会: 単一政党の革命党(CCH)承認の立候補者。普通選挙による。
元首:アリ・ハッサン・ムウイニ
宗教: 本土は60%がイスラム、ザンジバルは97%以上。他はキリスト、ヒンズー。
教育: 7才から7年間のプライマリスクール(義務教育)、中学校はその後6年。
文盲率は13%と言われている(1983)
新聞: Daily News (8万部)
放送: ラジオのみ。テレビはない。
通貨: タンザニア・シリング。 1US\$ = 200TSh (1991, 3月)
主要産品: コーヒー、綿花、タバコ、カシューナッツ、クロコ
GNP: 1988年で3780百万US\$
1人当りGNP: 160US\$ (1988)
貿易: 1987年 輸入1165百万\$。輸出348百万\$、外貨準備高32百万\$
主要輸出収入: コーヒー35%、綿花13%、クロコ10%、サイヤ5%、タバコ5%
対外債務残高: 4068百万\$(1988)

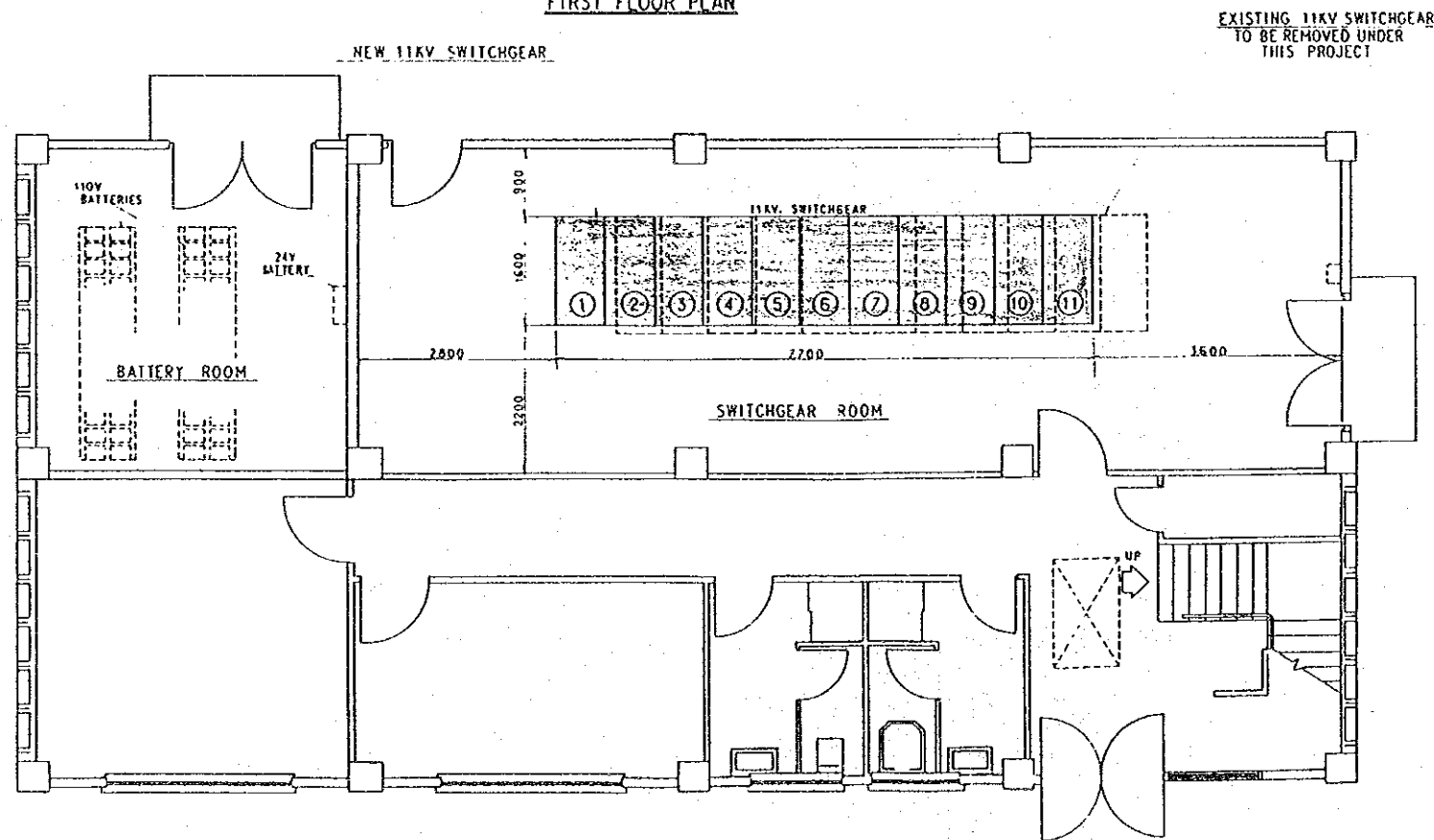
(出典: アフリカ年鑑 89-90版および外務経協の開発援助資料)

変電所設計図面



FIRST FLOOR PLAN

NOTES
 [Symbol] SHOWS THE NEW 11KV SWITCHGEAR UNDER THIS CONTRACT.
 EXISTING MOSAIC CONTROL PANEL SHALL BE MODIFIED FOR CONTROL OF NEW 11KV SWITCHGEAR



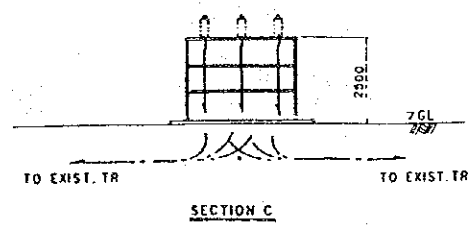
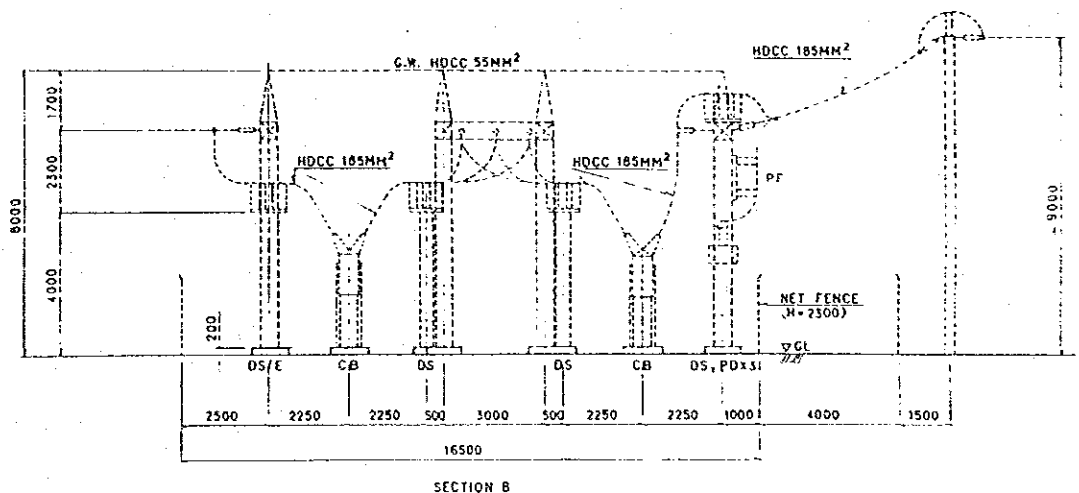
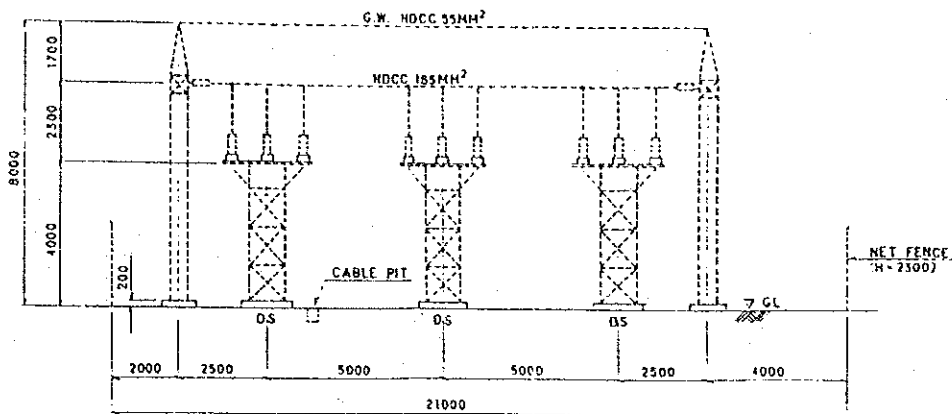
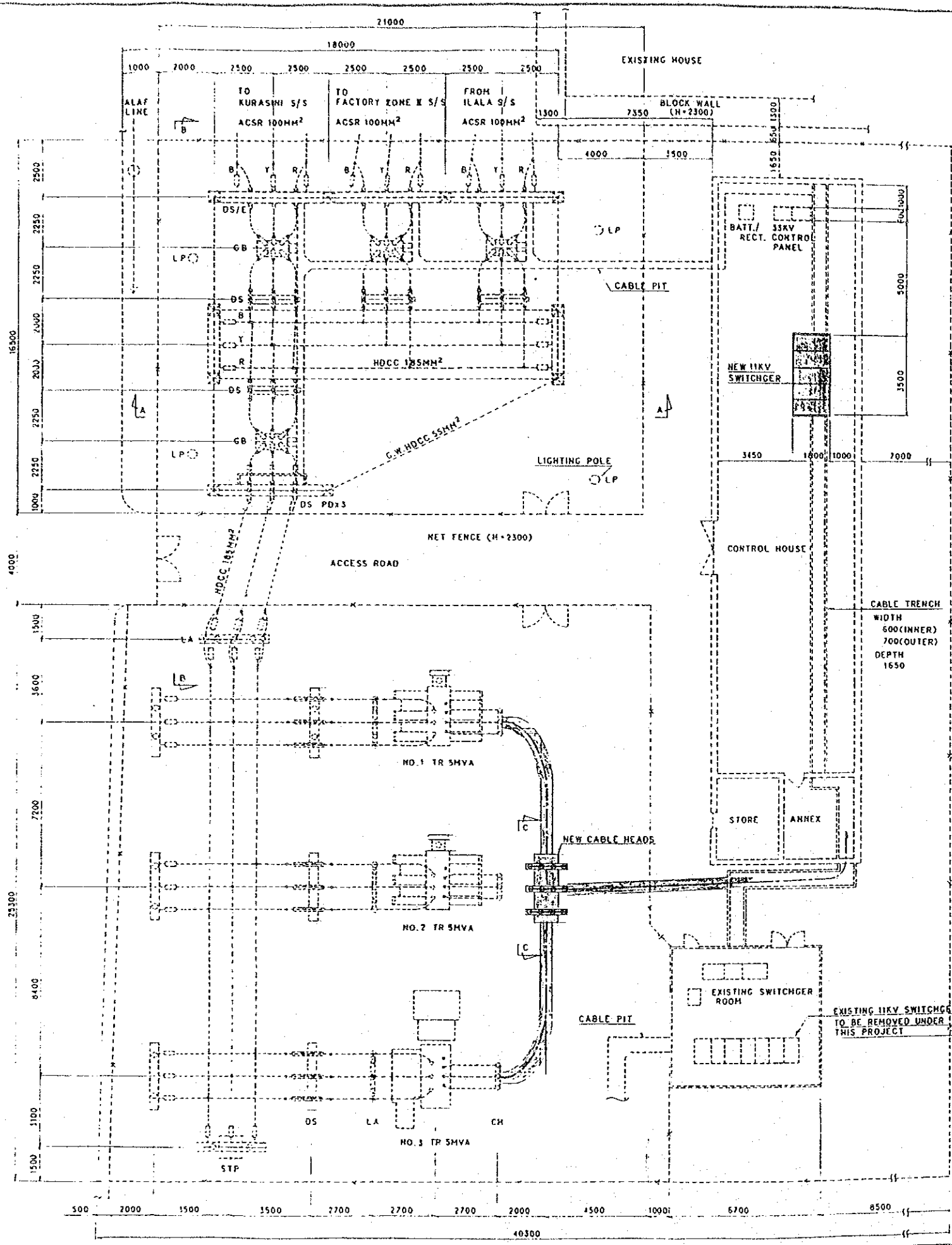
GROUND FLOOR PLAN

EXISTING 11KV SWITCHGEAR TO BE REMOVED UNDER THIS PROJECT

NO.	FEEDER NAME OF NEW 11KV SWITCHGEAR
1	BREWERY
2	AZANIA
3	TOWN FEEDER NO.1
4	KURASINI INTERCONNECTOR 1
5	33/11KV TRANSFORMER 1
6	BUS SECTION
7	33/11KV TRANSFORMER 2
8	KURASINI INTERCONNECTOR 2
9	INDUSTRIAL FEEDER
10	TOWN FEEDER NO.2
11	MAGOMENI / FEEDER UBUNGO

SCALE: 1/50

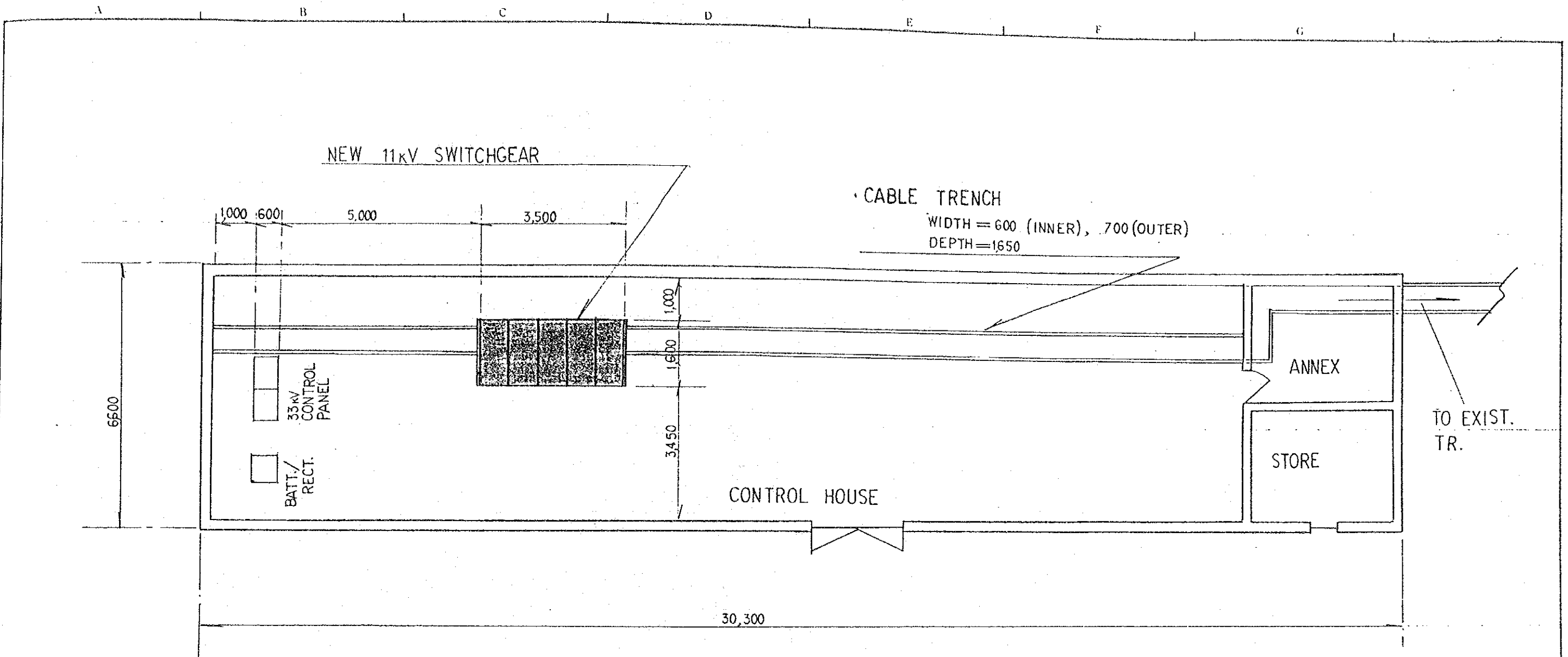
PANEL ARRANGEMENT IN EXISTING CONTROL ROOM OF ILALA S/S



NOTE
 - - - - - EXISTING
 [Hatched Area] UNDER THIS PROJECT

FACTORY ZONE I S/S GENERAL ARRANGEMENT

SCALE 1/100

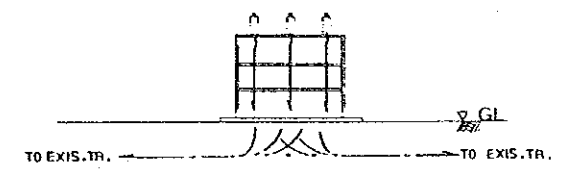
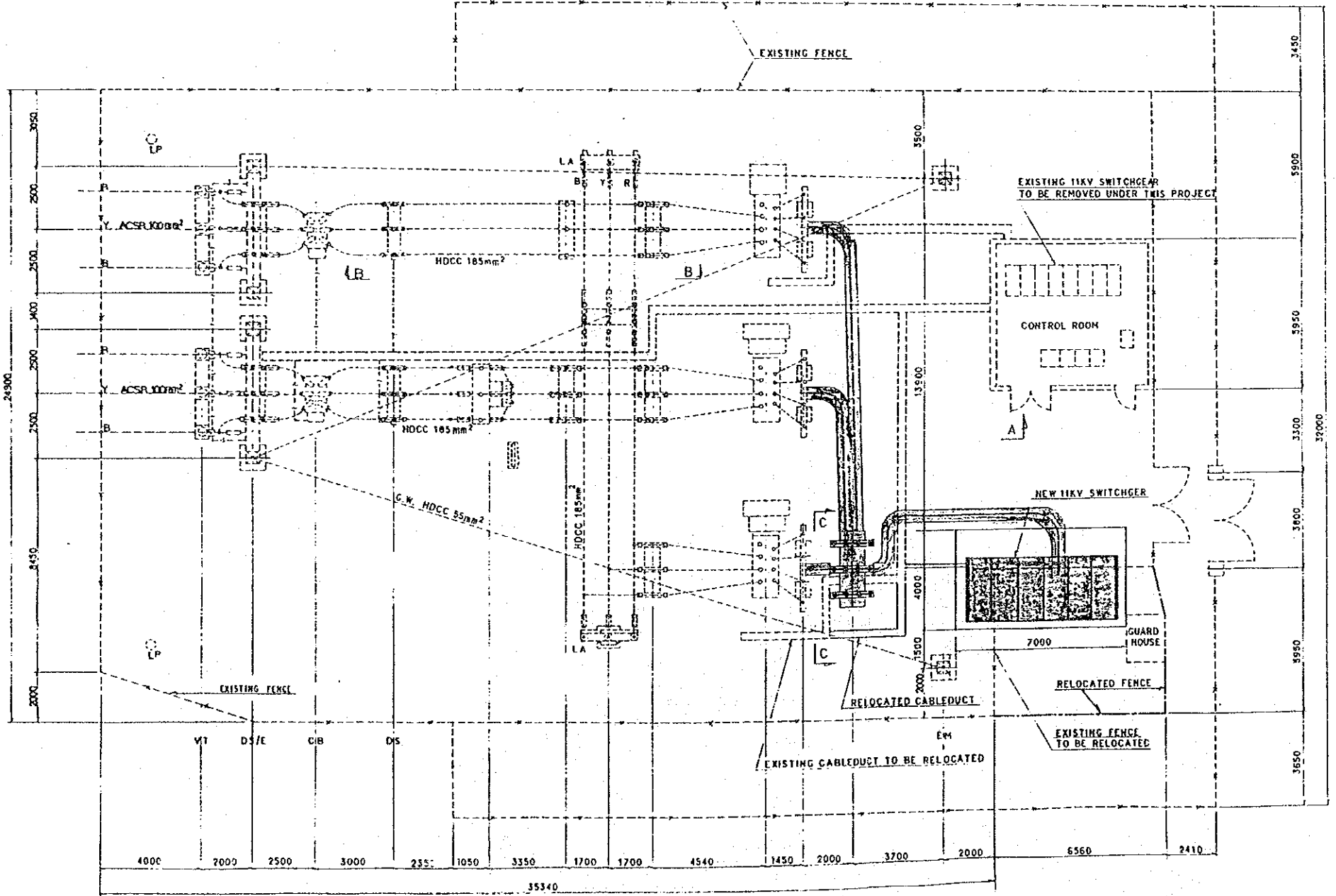
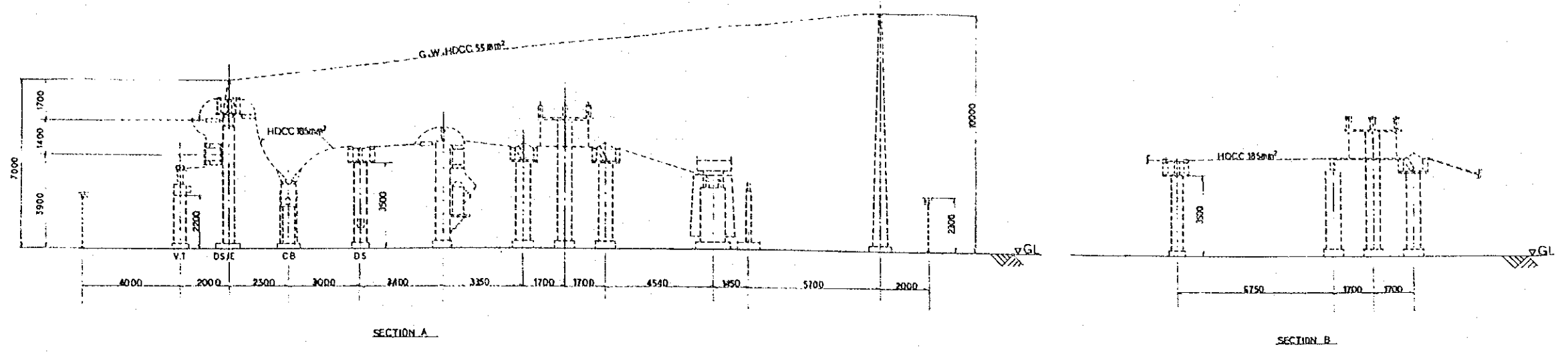


NOTE

: UNDER THIS CONTRACT

LAYOUT FOR EXIST. FACTORY
ZONE-1 CONTROL HOUSE

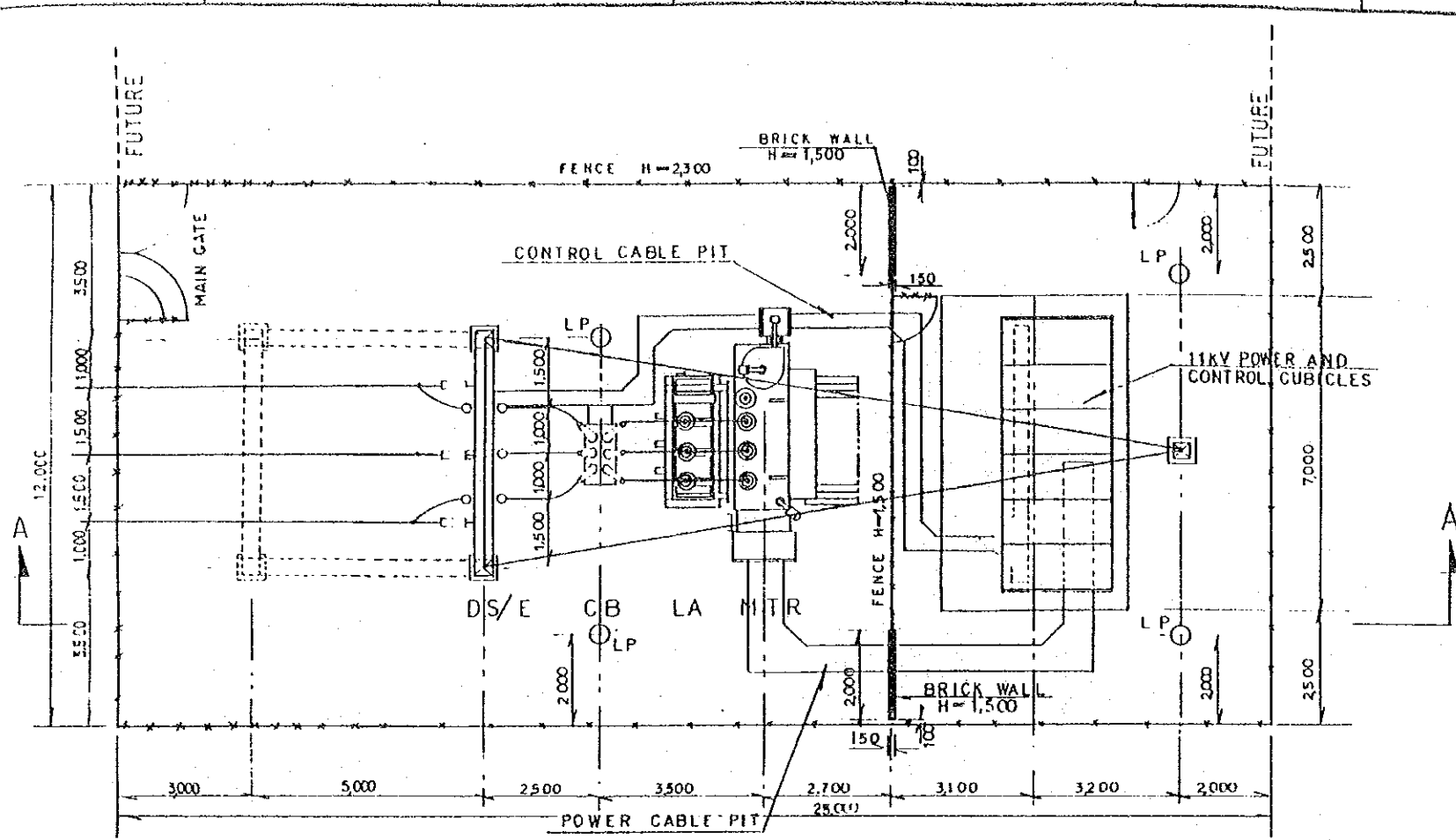
SCALE: 1/100



NOTE
 - - - - - EXISTING
 [Hatched Box] UNDER THIS CONTRACT

LAYOUT FOR 33/11KV OYSTERBAY

SCALE: 1/100



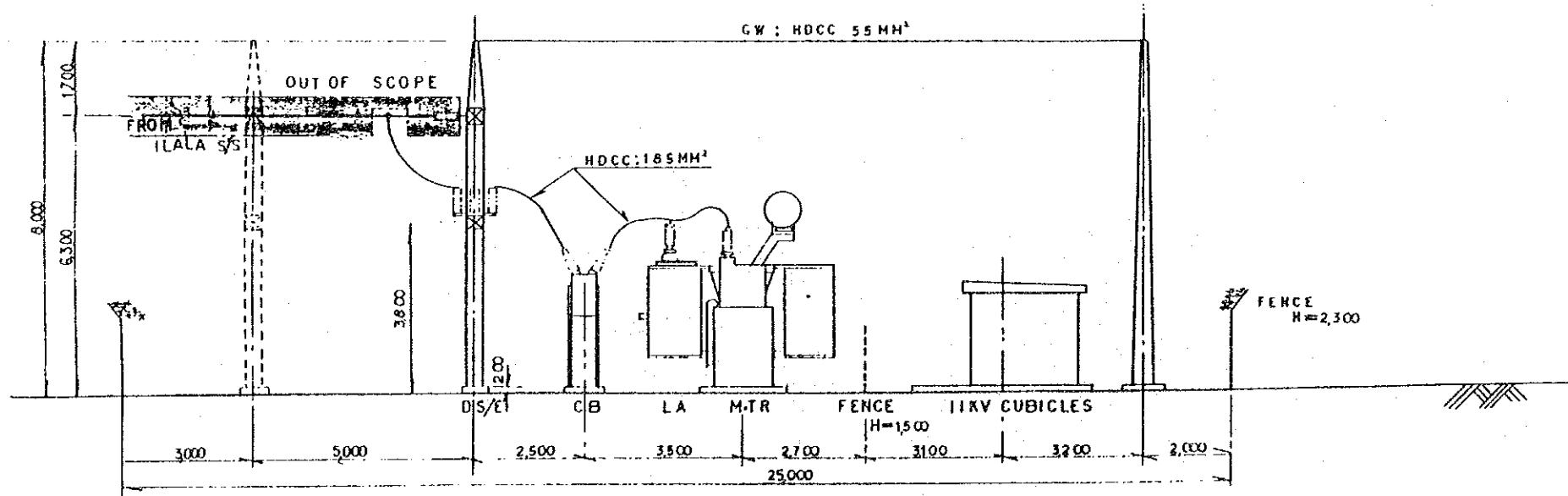
PLAN

LEGENDS:

- DS/E : DISCONNECTING SWITCH WITH EARTHING DEVICE
- CB : CIRCUIT BREAKER
- LA : LIGHTNING ARRESTER
- M.TR : MAIN TRANSFORMER
- LP : LIGHTING POLE

NOTE:

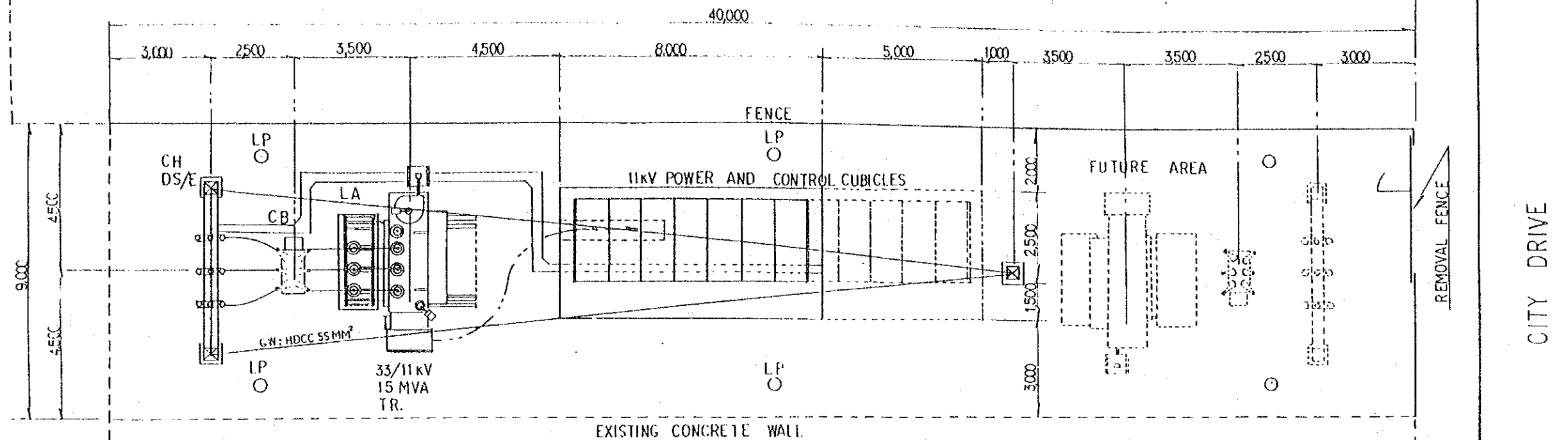
SHOWS OUT OF SCOPE UNDER THIS CONTRACT.



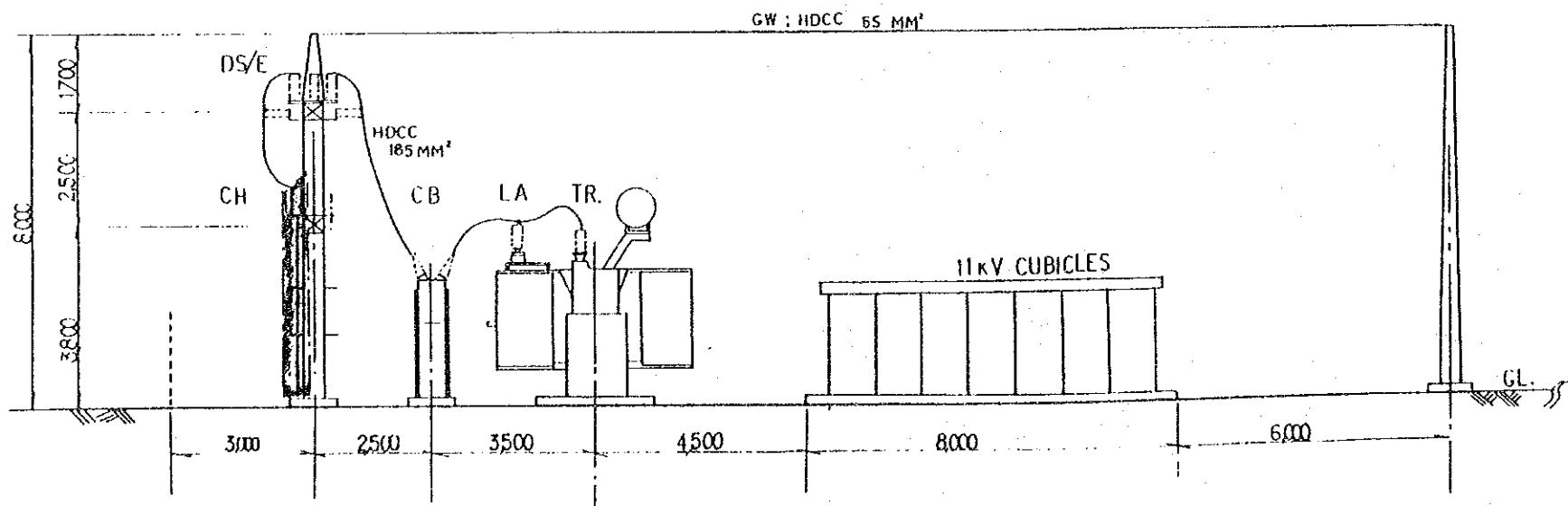
SECTION A-A

LAYOUT FOR
MSASANI 33/11KV S/S

SCALE : 1/100



PLAN



SECTION

LEGEND

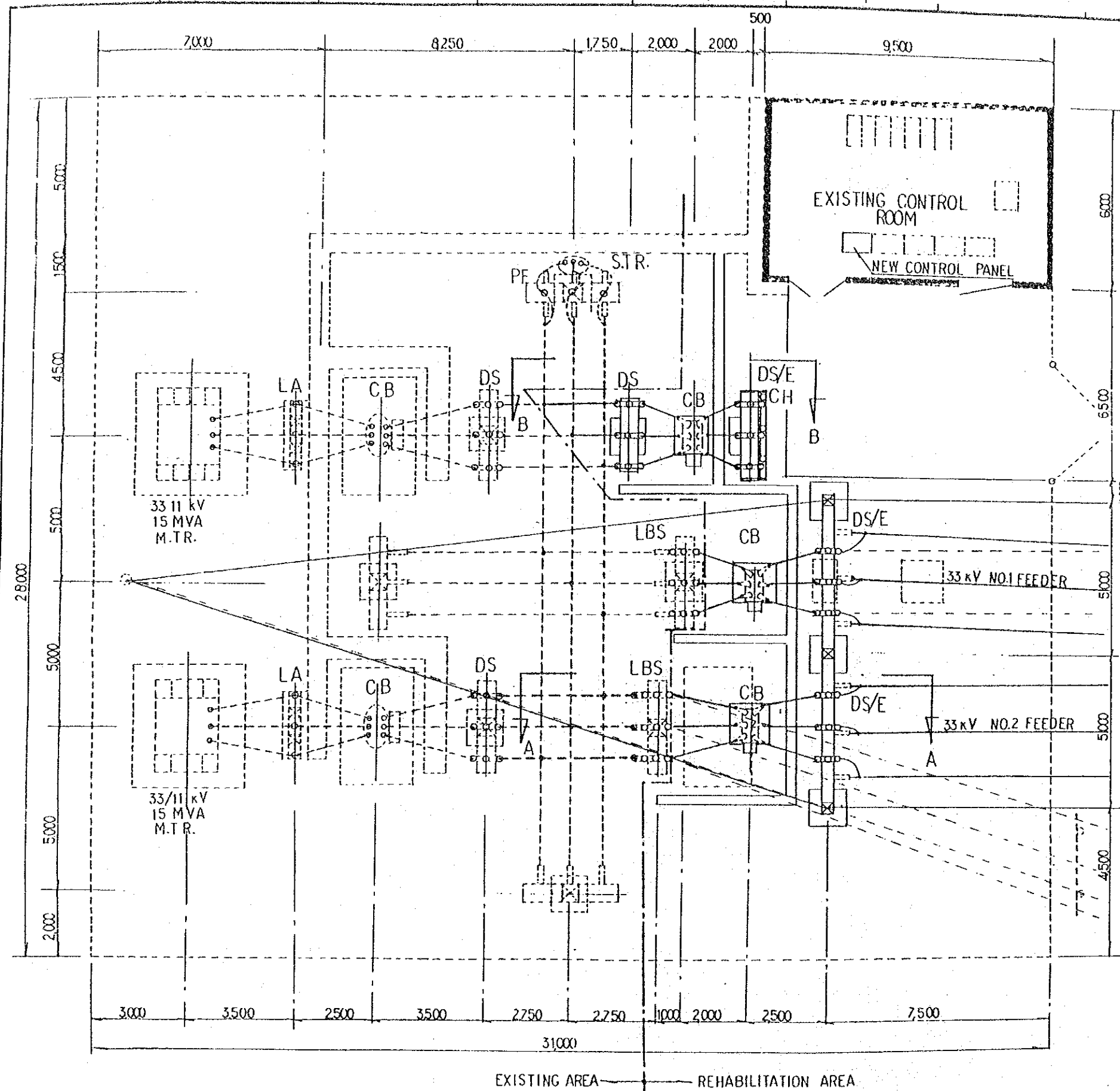
- DS/E : DISCONNECTING SWITCH WITH EARTHING DEVICE
- CH : CABLE HEAD
- CB : CIRCUIT BREAKER
- LA : LIGHTNING ARRESTER
- TR. : TRANSFORMER
- LP : LIGHTING POLE

NOTE

SHOWS OUT OF SCOPE UNDER THIS CONTRACT.

LAYOUT FOR
SOKOINE ROAD 33/11 kV S/S

SCALE : 1/100

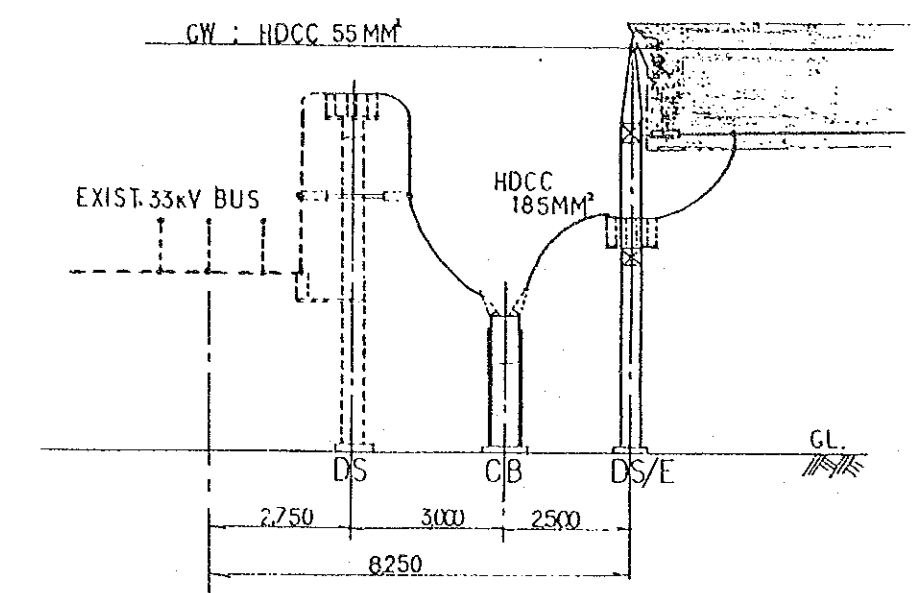


PLAN

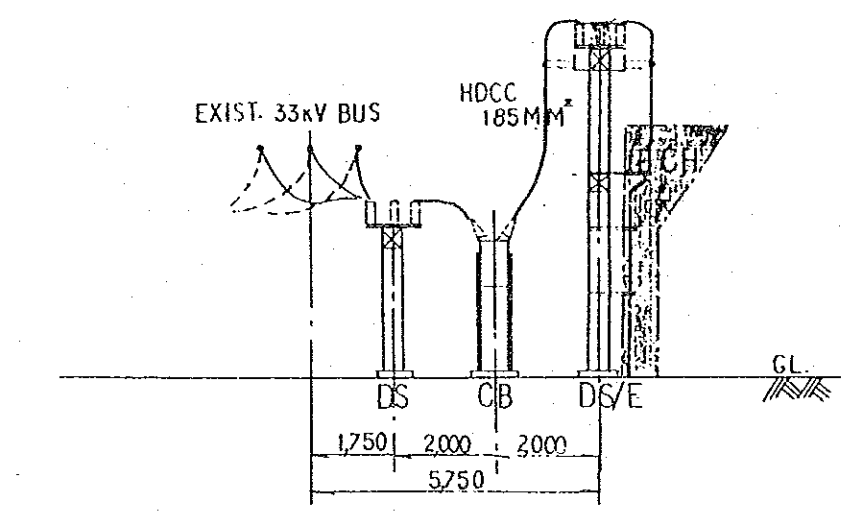
NOTE:

- : OUT OF SCOPE
- : EXISTING
- : UNDER THIS PROJECT

SCALE : 1/100



SECTION A-A

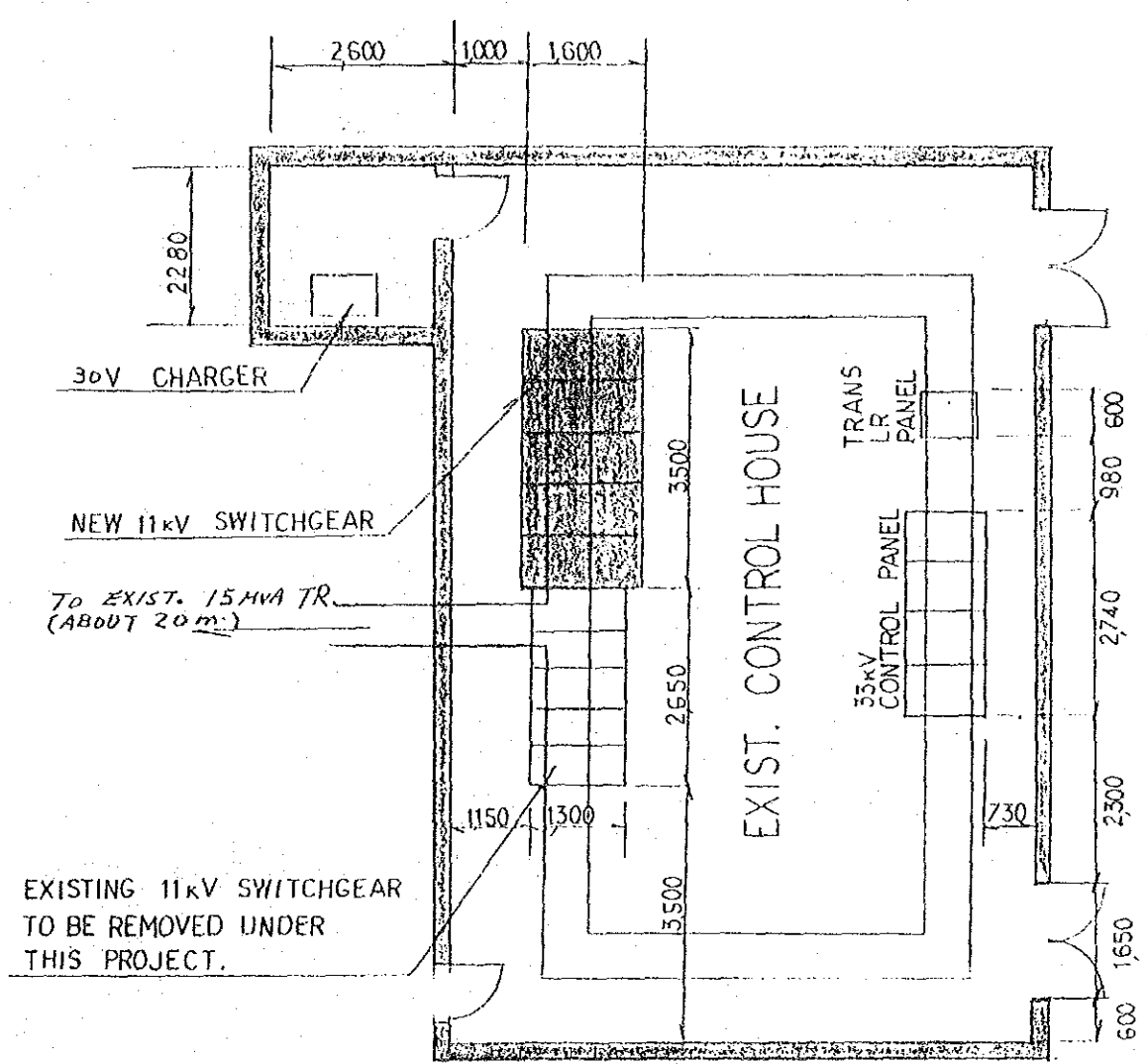


SECTION B-B

LEGEND:

- CH : CABLE HEAD
- DS/E: DISCONNECTING SWITCH WITH EARTHING DEVICE
- DS : DISCONNECTING SWITCH
- CB : CIRCUIT BREAKER
- LBS: LOAD BREAKING SWITCH

LAYOUT FOR REHABILITATION OF CITY CENTER 33/11kV S/S



NOTE

■ : UNDER THIS CONTRACT

SCALE : 1/100

KURSINI S/S COTROL HOUSE

JICA