

資料-1 調査団員・氏名

調査団員・氏名

1. 基本設計調査

氏名	担当業務	現職
牧野 耕司	総括	JICA タンザニア事務所次長
今井 健	計画管理	国際協力事業機構 無償資金協力部 業務第一グループ 運輸交通・電力チ ーム副主任
小宮 雅嗣	業務主任/電力計画/ 変電設備計画	八千代エンジニアリング(株)
本庄 暢之	送配電設備計画/ 環境社会配慮	電源開発(株)
武岡 三七一	建築計画/自然条件調査	電源開発(株)
宇留野 厚人	調達計画/積算	八千代エンジニアリング(株)
加藤 厚志	送配電設備設計 (自社負担)	電源開発(株)

2. 基本設計概要説明調査

氏名	担当業務	現職
林 宏之	総括	国際協力機構 無償資金協力部 業務第一グループ 運輸交通・電力チーム主任
小宮 雅嗣	業務主任/電力計画/ 変電設備計画	八千代エンジニアリング(株)
本庄 暢之	送配電設備計画/ 環境社会配慮	電源開発(株)

資料-2 調査行程

調査工程

1. 基本設計調査

No.	日付		行動		滞在地
			官ベース	コンサルタント	
1	9月16日	(土)		移動{羽田 :20:40 JL1319 → 関空 21:55} 移動{関空 23:15 JL5099 → ドバイ 05:00+1}	機内
2	9月17日	(日)	移動{ヨハネスブルグ 9:50 SA188 → ダルエス サラーム 14:20}	移動{ドバイ 14:30 EK725 → ダルエスサラーム 14:30} 団内協議	ダルエスサラーム
3	9月18日	(月)		<ul style="list-style-type: none"> ● JICAタンザニア事務所表敬訪問及び本調査行程・内容の説明と協議 ● 日本大使館表敬訪問及び本調査行程・内容の説明と協議 ● エネルギー鉱山省表敬訪問及びインセプションレポートの説明と協議 ● TANESCO表敬訪問及びインセプションレポートの説明と協議 ● 現地調査：送電線ルート及び新オイスターベイ変電所 	ダルエスサラーム
4	9月19日	(火)		<ul style="list-style-type: none"> ● TANESCOおよびエネルギー鉱山省との協議 ● M/D協議及びサイン 	ダルエスサラーム
5	9月20日	(水)		<ul style="list-style-type: none"> ● TANESCOおよびエネルギー鉱山省との協議 ● 日本大使館及びJICAタンザニア事務所へM/Dサインの報告 ● 現地調査：送電線ルート及び新オイスターベイ変電所 	ダルエスサラーム
6	9月21日	(木)	出発 {ダルエスサラーム: 16:30 EK726→ドバイ 23:00}	● TANESCOキノンドニ支社との協議	ダルエスサラーム
7	9月22日	(金)	日本到着(羽田)	● 送電線ルート及び新オイスターベイ変電所サイト 調査	ダルエスサラーム
8	9月23日	(土)		<ul style="list-style-type: none"> ● 送電線ルート及び新オイスターベイ変電所サイト 調査 (武岡・加藤) 移動{羽田 :20:40 JL1319 → 関西 21:55} 移動{関西 23:15 JL5099 → ドバイ 05:00+1} 	ダルエスサラーム
9	9月24日	(日)		<ul style="list-style-type: none"> ● 団内協議・資料整理 (武岡・加藤) 移動{ドバイ 14:30 EK7:25 → ダルエスサラーム 14:30} 	ダルエスサラーム
10	9月25日	(月)		<ul style="list-style-type: none"> ● 132kV送電線ルート調査 ● 埋設物調査 ● 新オイスターベイ変電所位置・構内確認 ● 既設ウブンゴ変電所調査 ● 世銀・SIDAとの協議 	ダルエスサラーム
11	9月26日	(火)		<ul style="list-style-type: none"> ● TANESCOおよびエネルギー鉱山省との協議 ● 132kV送電線ルート調査 ● 埋設物調査 ● 現地工事業者調査 	ダルエスサラーム
12	9月27日	(水)		<ul style="list-style-type: none"> ● TANESCO評議会議長との協議 ● 132kV送電線ルート調査 ● 現地工事業者へ見積依頼 	ダルエスサラーム
13	9月28日	(木)		<ul style="list-style-type: none"> ● 132kV送電線ルート調査 ● キノンドニ区役所との協議 ● TANESCOとの協議、資料収集 ● 埋設物調査 ● イララ変電所視察 	ダルエスサラーム
14	9月29日	(金)		<ul style="list-style-type: none"> ● 埋設物調査 ● キノンドニ区役所との協議とムウェンゲバス停合 同調査 ● 132kV送電線ルート調査 	ダルエスサラーム
15	9月30日	(土)		● 団内協議・資料整理	ダルエスサラーム
16	10月1日	(日)		● 団内協議・資料整理	ダルエスサラーム
17	10月2日	(月)		<ul style="list-style-type: none"> ● レポートの説明と協議 ● 再委託業者と協議・契約 ● 132kV送電線ルート調査 ● 配電線ルート確認・協議 ● ニューバガモヨ道路拡幅計画確認 	ダルエスサラーム
18	10月3日	(火)		<ul style="list-style-type: none"> ● JICAタンザニア事務所との協議 ● TANESCOとの協議 ● TANROADSとの協議 ● 11/33kV配電線ルート確認・協議 ● 埋設物調査 ● 送電線路のポーリング工事状況確認 	ダルエスサラーム

No.	日付		行動		滞在地
			官ベース	コンサルタント	
19	10月4日	(水)		<ul style="list-style-type: none"> 132kV送電線ルート調査 TANROADS/CEOとの協議 既設変電所調査 11kV及び33kV配電線調査 新変電所内のボーリング工事状況確認 	ダルエスサラーム
20	10月5日	(木)		<ul style="list-style-type: none"> 埋設物調査 TANROADS/CEOとの協議 市場調査 送電線路のボーリング工事状況確認 (加藤)出発 {ダルエスサラーム :16:30 EK726→ドバイ 23:00}	ダルエスサラーム
21	10月6日	(金)		<ul style="list-style-type: none"> JICAとの協議 埋設物調査 市場調査 フィールドレポート作成 (加藤) 移動{ドバイ 02:50 JL5090 → 関空 17:20} 移動{関空 18:45 JL1316 → 羽田 19:55}	ダルエスサラーム
22	10月7日	(土)		<ul style="list-style-type: none"> TANESCO / CEOとの協議 団内協議・資料整理 フィールドレポート作成 (武岡)出発 {ダルエスサラーム :16:30 EK726→ドバイ 23:00}	ダルエスサラーム
23	10月8日	(日)		<ul style="list-style-type: none"> 団内協議・資料整理 フィールドレポート作成 (武岡) 移動{ドバイ 02:50 JL5090 → 関空 17:20} 移動{関空 18:45 JL1316 → 羽田 19:55}	ダルエスサラーム
24	10月9日	(月)		<ul style="list-style-type: none"> TANESCOおよびエネルギー鉱山省との協議 フィールドレポート作成 TANROADSとの協議 	ダルエスサラーム
25	10月10日	(火)		<ul style="list-style-type: none"> フィールドレポート協議・サイン TANESCOおよびエネルギー鉱山省との協議 TANROADSとの協議 	ダルエスサラーム
26	10月11日	(水)		<ul style="list-style-type: none"> TANESCOおよびエネルギー鉱山省との協議 TANROADSとの協議 国家環境管理審議会との協議 団内協議・資料整理 	ダルエスサラーム
27	10月12日	(木)		<ul style="list-style-type: none"> キノンド二区役所との協議 ダルエスサラームとの協議 TANESCOおよびエネルギー鉱山省との協議 TANROADSとの協議 団内協議・資料整理 	ダルエスサラーム
28	10月13日	(金)		<ul style="list-style-type: none"> TANESCOおよびエネルギー鉱山省との協議 JICA及び日本大使館表敬訪問・報告 	ダルエスサラーム
29	10月14日	(土)		移動{ダルエスサラーム :16:30 EK726→ドバイ 23:00}	機内
30	10月15日	(日)		移動{ドバイ 02:50 JL5090 → 関西 17:20} 移動{羽田 18:45 JL1316 → 羽田 19:55}	

2. 基本設計概要説明調査

No.	日付		行動			滞在地
			官ベース 林	コンサルタント		
				小宮	本庄	
1	2月24日	(土)		移動{成田 18:30 JL053 → 名古屋 19:50}		機内
2	2月25日	(日)		移動{名古屋 23:00 JL5097 → ドバイ 06:10+1}		ダレスサラム
3	2月26日	(月)		移動{ドバイ 10:00 EK725 → ダレスサラム 14:35}		ダレスサラム
4	2月27日	(火)		•JICA事務所と打合せ •TANESCOと協議		ダレスサラム
5	2月28日	(水)	移動{ヨハネスブルク 13:50 SA7167 → ダレスサラム 18:30}	•TANESCOと協議		ダレスサラム
6	3月1日	(木)	•TANESCO・エネルギー 鉱山省と協議及びM/D署名			ダレスサラム
7	3月2日	(金)	•大使館・JICA事務所へ の報告 移動{ダレスサラム 16:30 EK762 → ドバイ 22:55}	•TANESCOと協議		ダレスサラム
8	3月3日	(土)	移動{ドバイ 02:50 JL5090 → 関西 16:40}	•団内会議		ダレスサラム
9	3月4日	(日)	移動{関西 18:30 JL1316 → 羽田 19:40}	•団内会議		ダレスサラム
10	3月5日	(月)		•TANESCOと協議、サイト調査		ダレスサラム
11	3月6日	(火)		•TANESCOと協議		ダレスサラム
12	3月7日	(水)		•TANESCOと協議		ダレスサラム
13	3月8日	(木)		•JICA事務所への報告 移動{ダレスサラム 16:30 EK762→ドバイ 22:55}		機内
14	3月9日	(金)		移動{ドバイ 02:50 JL5090 → 関西 16:40}		
				移動{関西 18:30 JL1316 → 羽田 19:40}		

資料-3 関係者(面会者)リスト

関係者(面会者)リスト

所属及び氏名

職位

エネルギー鉱山省

Ministry of Energy and Minerals (MEM)

Mr. Bashir J. Mrindoko	Commissioner for Energy Petroleum Affairs
Mr. Prosper A. M. Victus	Assistance Commissioner for Energy
Mr. Theophilillo Bwakea	Assistance Commissioner (Electricity)
Mr. Mathew M. Mbwambo	Senior Executive Engineer (Electrical)
Mr. Erick Rugabera	Energy Engineer

タンザニア電力公社

Tanzania Electric Supply Company Ltd (TANESCO)

Ambassador Fulgence M. Kazaura	Chairman of the Board
Dr Idris Rashid	Managing Director
Mr. Hans Lottering	Deputy Managing Director
Mr. Decklan Mhaiki	General Manager Transmission
Mr. Anton G. Booyzen	General Manager Distribution
Mr. Nantes Kruger	General Manager Support Service
Mr. Lothi T. J. Ole Mungaya	Director of Finance
Mr. Boniface S. Njombe	Ag Director of Project
Mr. Nsajigwa J. Mwaisaka	Manager Distribution Safety
Mr. Maneko JJ Katyega	Chief Research & Investigations Engineer
Mrs. Mercy S. Baregu.	Chief Project Engineer
Mr. Simon Kihyo	Chief Distribution Engineer
Mr. Abdullah Fereshi	Chief Transmission Engineer
Mr. N. L. Skauki Ntimba	Chief Construction Engineer
Mr. A. F. Nanyaro	Chief Electrical Plant & Maintenance Engineer
Mr. James Mtei	Senior Engineer Protection
Mr. Kato Kabata	Senior Engineer Geologist
Mr. Wangwe Mwita	Senior Procurement Engineer PMU
Mr. John F. Sakia	Senior Transmission Engineer
Mr. Josehat Gigadye	Senior Engineer Electrical Workshop
Mr. T. Pancras Rwelamila	Project Engineer
Mr. John Lazimah	Environmental Engineer
Mr. Stanley Shayo	Transmission Engineer
Mr. Gilbert S Mrosso	Land Surveyor
Mr. Hamisi Boby	Surveyor

<Kinondoni North Regional Office>

Mrs. Sophia S. Mgonja	Regional Manager
Mr. Makoye Ng'erere	Senior Engineer
Mr. Benedict Bahati	Revenue Protection Engineer
Mr. Sosthenes Kateule	Planning Engineer
<DMT KAUDA>	
Mr. Patrick D. Songa	Representative
Mr. Jafari Mpina	Maintenance Engineer
Mr. Greson Manase	Maintenance Engineer
<Ilala Substation>	
Mr. Joseph Sundi Manene	Senior System Control Engineer
<Factory Zone III Substation>	
Mr. Mafuko J. Chinganga	System Supervisor
Mr. Rashldi Minawandu	Operator
<Tegeta Substation>	
Mr. Godwin Mtembei	System Operator
Mr. Yohani Sheso	System Operator

タンザニア道路公社

Tanzania National Road Agency (TANROADS)

Dr. FY Addo Abedi	Chief Executive Officer
Mr. Boniface H. P. Nyiti	Director of Development
Mr. Ndyamukama J.	Regional Manager
Mr. Jason M. Rwiza	Manager Project-Management Unit
Mr. Simon Mghani	

ダルエスサラーム上下水道公社

Dar es Salaam Water and Sewerage Authority (DAWASA)

Mr. Anthony A. M. T. M. Masaawe	Chief Operation Officer
Mr. S. J. Bunyese	Program Delivery Engineer

ダルエスサラーム上下水道公社(運営・維持管理)

Dar es Salaam Water and Sewerage Corporation (DAWASCO)

Mr. Jackosn L. C. Midada	Chief Operation Officer
Mr. Mizunguli	Operation Officer
Mrs. Zubeba H. Hsemo	Area Manager (Kinondoni)
Mr. Zanda	Maintenance Staff (Kinonndoni)

ダルエスサラーム市議会
Dar es Salaam City Council

Mr. Enoch J. Kitandu	Transportation Engineer
Mr. K. C. L. Mwambene	City Engineer
Mr. Hamidu M. Mgaya	Principal Surveyor Mayor's Assistant

キノンドニ区
Kinondoni Municipal Council

Mr. Benjamin M. Maziku	Municipal Engineer
Mr. Harold W Sawaki	Municipal Roads Engineer

国家環境管理委員会
National Environmental Management Council

Mr. Joseph R. Kombe	Acting Director
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世界銀行タンザニア事務所
The World Bank Tanzania Office

Mr. Ralph Karhammar	Sr. Energy Specialist
Mr. Baruaay Elijah A. T. Luhanga	Power Engineer

在タンザニアスウェーデン大使館
Embassy of Sweden in Tanzania

Ms. Anne-Lie Engvall	Program Officer Infrastructure
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コンサルタントなど
Other Consultants

Mr. Craig Wood	Managing Director Logistics Consulting Group Ltd.
Mr. Alan Mayers	Director Logistics Consulting Group Ltd.
Mr. Wessel Schulting	Logistics Consulting Group Ltd.
Mr. Tumsifu Meena	Logistics Consulting Group Ltd.
Mr. Harko Kloeze	Project Manager Interbeton
Mr. Dawid Breed	Resident Engineer Stewart Scott
Mr. Mussa Nyamsingwa	Director Norplan Tanzania Ltd.

在タンザニア日本国大使館
Embassy of Japan in Tanzania

伊藤 浩 氏	First Secretary
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JICA タンザニア事務所
JICA Tanzania Office

小幡俊弘 氏

所長(BD 時)

柏谷亮 氏

所長(DBD 時)

牧野耕司 氏

次長

坪池明日香 氏

職員

老川武志 氏

職員

資料-4 討議議事録(M/D)

**Minutes of Discussions
on the Basic Design Study
on the Project for Reinforcement of Transmission and Distribution Facilities
in Oyster Bay Substation
in the United Republic of Tanzania**

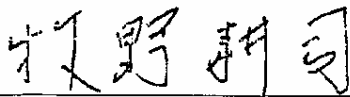
Referring to the results of the Preliminary Study which was conducted in March 2006, the Government of Japan decided to conduct a Basic Design Study on the Project for Reinforcement of Transmission and Distribution Facilities in Oyster Bay Substation (hereinafter referred to as "the Project"), and entrusted the study to the Japan International Cooperation Agency (hereinafter referred to as "JICA").

JICA sent to the United Republic of Tanzania (hereinafter referred to as "Tanzania") the Basic Design Study Team (hereinafter referred to as "the Team"), headed by Mr. Koji Makino, Deputy Resident Representative, JICA Tanzania Office, and is scheduled to stay in the country from September 17 to October 14, 2006.

The Team held discussions with the officials concerned from the Government of Tanzania and conducted a field survey in the study area.

In the course of the discussions and the field survey, both sides confirmed the main items described in the attached sheets.

Dar es Salaam, September 19, 2006

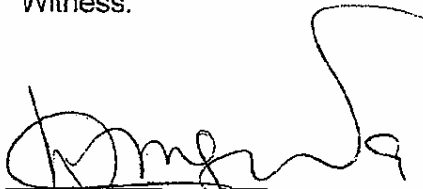


Koji Makino
Leader
Basic Design Study Team
JICA



Hans Lottering
General Manager Transmission
Tanzania Electric Supply Company
Tanzania

Witness:



Ngosha Said Magonya
Commissioner for External Finance
Ministry of Finance
Tanzania



Prosper A. M. Victus
Acting Commissioner for Energy and
Petroleum Affairs
Ministry of Energy and Minerals
Tanzania

ATTACHMENT

1. Title of the Project

The official title of the Project is "The Project for Reinforcement of Transmission and Distribution Facilities in Oyster Bay Substation."

2. Objective of the Project

The objective of the Project is to reinforce transmission and distribution facilities in Oyster Bay Substation.

3. Project Site

The Project site is in the north part of Dar es Salaam city, as shown in Annex-1.

4. Responsible and Implementing Organization

The responsible ministry is the Ministry of Energy and Minerals (hereinafter referred to as "MEM").

The implementation organization is Tanzania Electric Supply Company (hereinafter referred to as "TANESCO").

The organization charts of MEM and TANESCO are shown in Annex-2 and 3.

5. Items Requested by the Government of Tanzania

As the result of discussions, requested components were confirmed as below:

- Installation at New Oyster Bay Substation
 - 132/33kV 45MVA Transformer: 2 units
 - 33/11kV 15MVA Transformer: 2 units
 - Equipment related 132/33kV Transformer 1 lot
 - Equipment related 33/11kV Transformers 1 lot
 - 33kV Feeder Equipment: 5 feeders
 - 11kV Feeder Switchgear and Materials: 1 lot
- Construction of 132kV-240sqmm² Transmission Line between Ubungu Substation and New Oyster Bay Substation: approx. 7.0km
- Additional installation of 132kV outgoing feeder at Ubungu Substation: 1 bay
- Construction of 33kV-240sqmm² Distribution Line between New Oyster Bay Substation and existing Oyster Bay Substation: approx. 1.6km

The final components of the Project will be decided after further studies, and JICA will assess the appropriateness of the request and will report to the Government of Japan.

6. Japan's Grant Aid Scheme

The Tanzanian side understands the Japan's Grant Aid scheme explained by the Team, as described in Annex-4.

7. Environmental and Social Considerations

The Team explained the outline of JICA Environmental and Social Considerations Guideline (hereinafter referred to as "the JICA Guideline") to the Tanzanian side. The Tanzanian side took the JICA Guideline into consideration, and shall complete the necessary procedures.

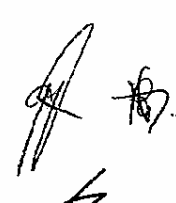


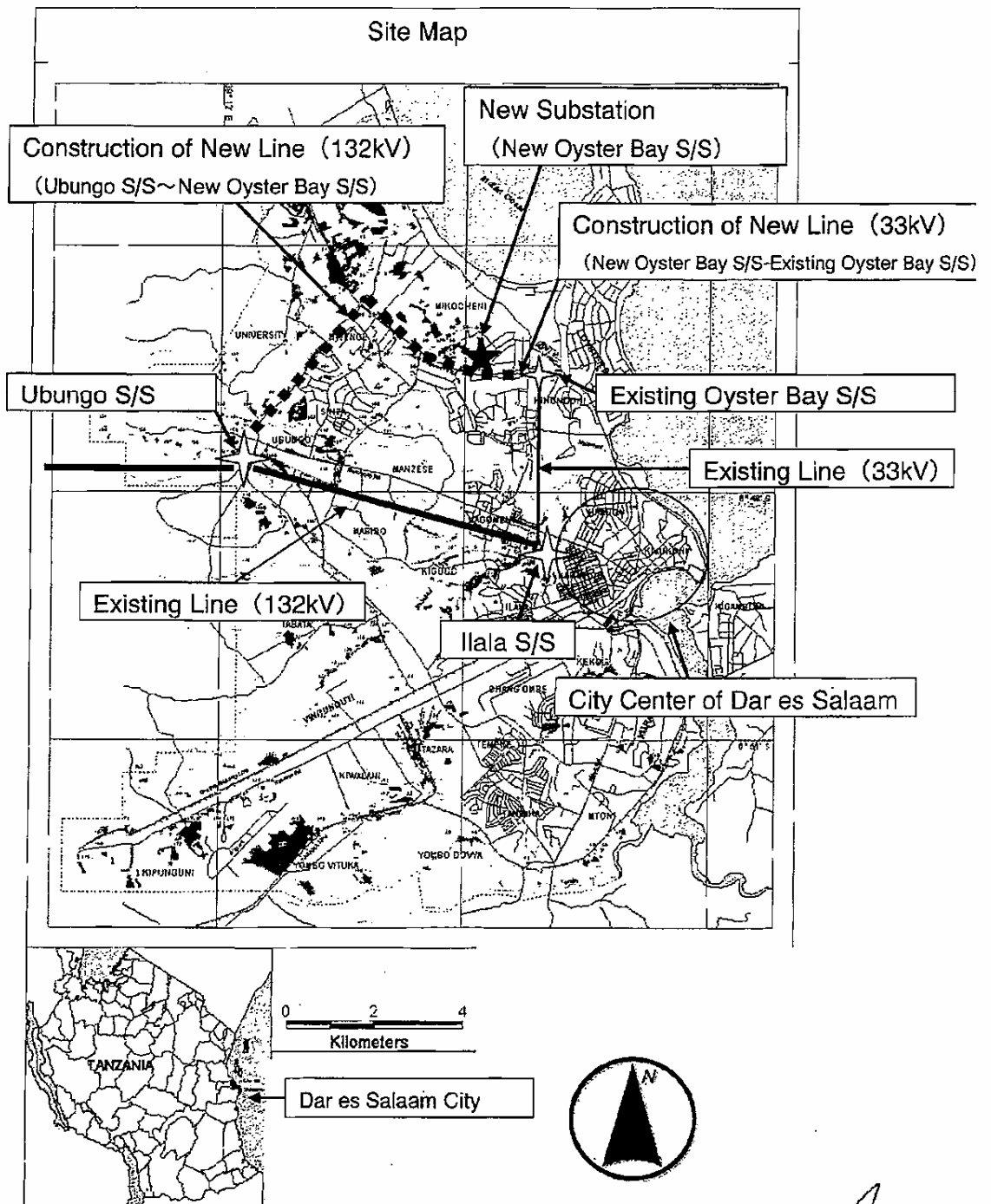
8. Schedule of the Study

- (1) The consultants will proceed to further studies in Tanzania by October 14, 2006.
- (2) JICA will prepare the draft report in English and dispatch a mission to Tanzania in order to explain its contents in February 2007.
- (3) When the contents of the report are accepted in principle by the Government of Tanzania, JICA will complete the final report and send it to the Government of Tanzania by April 2007.

9. Other Relevant Issues

- (1) The Tanzania side shall allocate the budget for its undertakings to be done in a timely manner, which are shown in Annex-5.
- (2) Concerning the construction of 33kV-240sqmm² Distribution Line between New Oyster Bay Substation and existing Oyster Bay Substation, TANESCO expressed that it could construct that distribution line by TANESCO on the conditions that the Japanese side procured the necessary materials for it.
- (3) The Team explained that the plan of the New Bagamoyo Road (section: Morocco-Tegeta; 17.4km) would affect the Project, and requested that the Tanzanian side should make necessary arrangements for the Team's smooth conduction of the filed survey in the study area. The Tanzanian side agreed on this requirement from the Team.
- (4) The Tanzanian side agreed that they were responsible for the land acquisition/lease for the Project, and that they would complete the necessary actions and allocate the necessary budget for that acquisition/lease before the next Japanese mission coming, which will be notified by the end of December 2006, by a letter.
- (5) The Tanzanian side explained to the Team about the following measures for the new transmission lines.
 - 1) For Sam Nujoma Road
 - ① The existing 33kV lines shall be relocated from the right side to the left side of the road heading to Mwenge junction, in order that new 132kV transmission line can be installed at the right side.
 - ② Tanzanian side promised to proceed with TANROADS to install the street light poles at the center part of the road.
 - 2) For New Bagamoyo Road
 - ① TANESCO shall provide the survey map indicating road boundary, by 26 September, 2006.
 - ② TANESCO will provide the Team the agreed plan for allowable space for new 132kV transmission line construction, among the related authority such as TANROADS, local governments, etc.

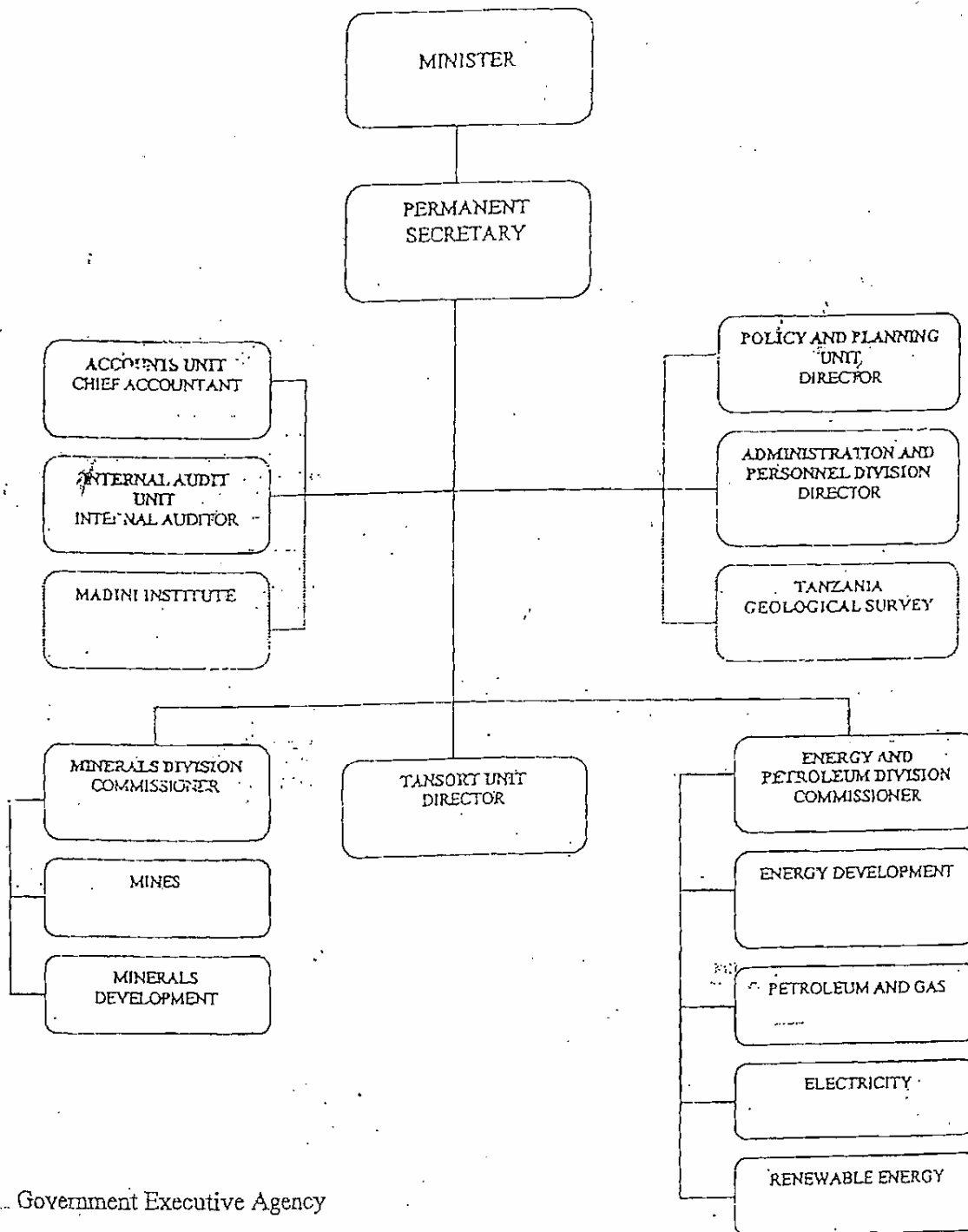




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Muundo wa Wizara ya Nishati na Madini

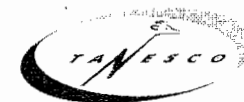
ORGANIZATION STRUCTURE OF
THE MINISTRY OF ENERGY AND MINERALS
AS APPROVED BY THE PRESIDENT - APRIL, 2001



Government Executive Agency

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TANZANIA ELECTRIC SUPPLY COMPANY LIMITED ORGANISATIONAL STRUCTURE



BOARD OF DIRECTORS
 Chairman: Ambassador: F.m. Kazaura
 8 - Directors
 Hon. Philip Magani; Mr. Arnold Kilewo; Mr. Adolar Mapunda;
 Mr.S. Saluja; Mr. Suleimani Juma; Mr. B.J. Mrindoko; Mrs.
 Agnes Bukuku; Mr. A. Mwakapugi.

MANAGING DIRECTOR
 Adrian Van Merwe

COMPANY SECRETARY
 G. Makia (Ag)

DIRECTOR INTERNAL AUDIT
 B. Mushi

GENERAL MANAGER GENERATION
 S.P. Mabada

GENERAL MANAGER TRANSMISSION
 Hans G. Lottering

GENERAL MANAGER DISTRIBUTION
 Athon G. Boozyzen

GENERAL MANAGER SUPPORT SERVICES.
 N. Kruger

DEPUTY GENERAL MANAGER TRANSMISSION

DEPUTY GENERAL MANAGER DISTRIBUTION
 W.G. Mhando

MANAGER PUBLIC RELATIONS
 D. Mshana

DEPUTY GENERAL MANAGER SUPPORT SERVICES.
 S.E. Wandiba (Ms.)

DIRECTOR THERMAL GENERATION
 G. Chgere

DIRECTOR HYRO GENERATION
 D. Mhaiki

DIRECTOR CORPORATE PLANNING & ESEARCH
 K.R. Abdulla

DIRECTOR SYSTEM CONTROL & TRANSM
 M.A. Saleh

DIRECTOR OF OPERATIONS
 C.L.M. Masawe

DIRECTOR OF DISTRIBUTION & CUSTOMER SVCS

DIRECTOR FINANCE
 L.O. Mungaya

DIRECTOR SUPPLIES & TRANSPORT
 N.O. Suke

DIRECTOR PRIVISATION UNIT
 W. Magambo

DIRECTOR HUMAN RESOURCES
 S. A. Simpilu

MANAGER THERMAL GENERATION
 G.C. Nyamuko

MANAGER KIDATU-HPP
 L. Tesha

MANAGER CORPORATE PLANNING
 F.N. Mayila

MANAGER ELECTRIFICATION
 M.Kingu

MANAGER DISTRIBUTION & SAFETY
 N. J. Mwaisaka

MANAGER GEN ACCOUNTS
 A. Chengula (Ms.)

MANAGER PROCUREMENT
 A. Chami (Ag)

DIRECTOR OF PROJECTS
 G. Njombe

MANAGER HUMAN RESOURCE
 A.s.Mtungue

MANAGER - MTERA HPP
 N. Kachwamba

MANAGER RESEARCH & DEVELOPMENT
 D.E.P Ngula

REGIONAL MANAGERS 24 REGIONS
 K'North - Ms S. Mgonja
 K'South - Mr G. Mnzava
 Ilala - R. E. Nsulau
 Temeke - MM Mugoya
 Mara - Mr S. Makala
 Iringa - Mr Lukumi
 Rukwa - Mr Mbwaga(Ag)
 Kigoma - Mr P. Shigela
 Kagera - Mr N. Kaviche
 Shinyanga - Mr F. Mpanduji
 K'Njaro - Mr S.Mpfitbitsa

Dodoma - Mr Kamoleka
 Mwanza - Mr C. Masasi
 Arusha - Mr M.Kalokola
 Mbeya - Mr D. Ndagomba
 Ruvuma - r.J.Mwimbundu(Ag)
 Lindi - Mr M. Kassanga(Ag)
 Morogoro - J. Mawenge
 Tabora - Mr Zorwa(Ag)
 Mbata - Mr Temu(Ag)
 Manyara - Ms S. Hiza
 Singida- Mr Kyeyeu
 Coast - Ms J. Ngahyoma

MANAGER FINANCE
 L. Kasanga (Ag)

MANAGER TRANSP & LOGISTICS
 A. Lutoganya

DIRECTOR OF SECURITY
 M. Kasyanju

DIRECTOR INF SYSTEM
 N.Chonya

MANAGER MANPOWER DEV. & TRAINING
 A. Mwingizi

MANAGER - PANGANI FALLS HALE
 J. Lugeiyamu

NB: Deputy General Managers were appointed as part of capacity building process and positions will be confirmed by the second half of 2006

VISION: To be an efficient and commercially focused utility Supporting the development of Tanzania
MISSION: To generate, Transmit, Distribute & Supply electricity in most effective, Competitive & Substanable manner
VALUES: Respect, Honesty, Loyalty, Ethical business conduct, Service excellence, Respect stakeholders' opinion & Enviromental friendly

17/07/2006

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JAPAN'S GRANT AID SCHEME

The Grant Aid scheme provides a recipient country with non-reimbursable funds to procure the facilities, equipment and services (engineering services and transportation of the products, etc.) for economic and social development of the country under principles 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

Japan's Grant Aid Scheme is executed through the following procedures.

Application	(Request made by a recipient country)
Study	(Basic Design Study conducted by JICA)
Appraisal & Approval	(Appraisal by the Government of Japan and Approval by Cabinet)
Determination of Implementation	(The Notes exchanged between the Governments of Japan and the recipient country)

Firstly, the application or request for a Grant Aid project submitted by a recipient country is examined by the Government of Japan (the Ministry of Foreign Affairs) to determine whether or not it is eligible for Grant Aid. If the request is deemed appropriate, the Government of Japan assigns JICA (Japan International Cooperation Agency) to conduct a study on the request.

Secondly, JICA conducts the study (Basic Design Study), using Japanese consulting firms.

Thirdly, the Government of Japan appraises the project to see whether or not it is suitable for Japan's Grant Aid Scheme, based on the Basic Design Study report prepared by JICA, and the results are then submitted to the Cabinet for approval.

Fourthly, the project, once approved by the Cabinet, becomes official with the Exchange of Notes (E/N) signed by the Governments of Japan and the recipient country.

Finally, for the smooth implementation of the project, JICA assists the recipient country in such matters as preparing tenders, contracts and so on.

2. Basic Design Study

1) Contents of the Study

The aim of the Basic Design Study (hereinafter referred to as "the Study"),

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conducted by JICA on a requested project (hereinafter referred to as "the Project"), is to provide a basic document necessary for the appraisal of the Project by the Government of Japan. The contents of the Study are as follows:

1. Confirmation of the background, objectives, and benefits of the Project and also institutional capacity of agencies concerned of the recipient country necessary for the Project's implementation.
2. Evaluation of the appropriateness of the Project to be implemented under the Grant Aid Scheme from a technical, social and economic point of view;
3. Confirmation of items agreed upon by both parties concerning the basic concept of the Project.
4. Preparation of a basic design of the Project.
5. Estimation of cost of the Project.

The contents of the original request are not necessarily approved in their initial form as the contents of the Grant Aid project. The Basic Design of the Project is confirmed considering the guidelines of Japan's Grant Aid scheme.

The Government of Japan requests the Government of the recipient country to take whatever measures are necessary to ensure its self-reliance in the implementation of the Project. Such measures must be guaranteed even through they may fall outside of the jurisdiction of the organization in the recipient country actually implementing the Project. Therefore, the implementation of the Project is confirmed by all relevant organizations of the recipient country through the Minutes of Discussions.

2) Selection of Consultants

For smooth implementation of the Study, JICA uses registered consulting firms. JICA selects firms based on proposals submitted by interested firms. The firms selected carry out a Basic Design Study and write a report, based upon terms of reference set by JICA.

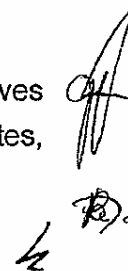
The consulting firms used for the Study are recommended by JICA to the recipient country to also work on the Project's implementation after the Exchange of Notes, in order to maintain technical consistency.

3. Japan's Grant Aid Scheme

1) Exchange of Notes (E/N)

Japan's Grant Aid is extended in accordance with the Notes exchanged by the two Governments concerned, in which the objectives of the project, period of execution, conditions and amount of the Grant Aid, etc., are confirmed.

- 2) "The period of the Grant Aid" means the one fiscal year which the Cabinet approves the project for. Within the fiscal year, all procedure such as exchanging of the Notes,



concluding contracts with consulting firms and contractors and final payment to them must be completed.

However, in case of delays in delivery, installation or construction, the period of the Grant Aid can be further extended for a maximum of one fiscal year at most by mutual agreement between the two Governments.

- 3) Under the Grant Aid, in principle, Japanese products and services including transport or those of the recipient country are to be purchased.

When the two Governments 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 consulting, contracting and procurement firm(s), are limited to "Japanese nationals". (The term "Japanese nationals" means persons of Japanese nationality or Japanese corporations controlled by persons of Japanese nationality.)

- 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 the Government of Japan. This "Verification" is deemed necessary to secure accountability of Japanese taxpayers.

- 5) Undertakings required to 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 the following:

1. To secure land necessary for the sites of the Project and to clear, level and reclaim the land prior to commencement of the Project,
2. To provide facilities for the distribution of electricity, water supply and drainage and other incidental facilities in and around the sites,
3. To secure buildings prior to the procurement in case the installation of the equipment,
4. To ensure all the expense and prompt execution for unloading, customs clearance at the port of disembarkation and internal transportation of the products purchased under the Grant Aid,
5. To exempt Japanese nationals from customs duties, internal taxes and other fiscal levies which will be imposed in the recipient country with respect to the supply of the products and services under the verified contracts,
6. To accord Japanese nationals, whose services may be required in connection with supply of the products and services under the Verified contracts, such facilities as may be necessary for their entry into the recipient country and stay therein for the performance of their work.



6) "Proper Use"

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

7) "Re-export"

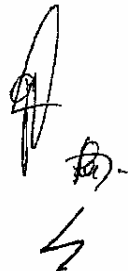
The products purchased under the Grant Aid should not be re-exported from the recipient country.

8) Banking Arrangement (B/A)

- a) The Government of the recipient country or its designated authority should open an account in the name of the Government of the recipient country in a bank in Japan (hereinafter referred to as "the Bank"). The Government of Japan 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 the Government of Japan under an Authorization to Pay (A/P) issued by the Government of recipient country or its designated authority.

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 to the Bank.

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Major Undertaking to be taken by Each Government

NO	Items	To be covered by Grant Aid	To be covered by Recipient side
1	To secure land		•
2	To clear, level and reclaim the site when needed		•
3	To construct gates and fences in and around the site		•
4	To bear the following commissions to a bank of Japan for the banking services based upon the B/A		
	1) Advising commission of A/P		•
	2) Payment commission		•
5	To ensure prompt unloading and customs clearance at the port of disembarkation in recipient country		
	1) Marine(Air) transportation of the products from Japan to the recipient country	•	
	2) Tax exemption and customs clearance of the products at the port of disembarkation		•
	3) Internal transportation from the port of disembarkation to the project site	•	
6	To accord Japanese nationals whose services may be required in connection with the supply of the products and the services under the verified contract such facilities as may be necessary for their entry into the recipient country and stay therein for the performance of their work		•
7	To exempt Japanese nationals from customs duties, internal taxes and other fiscal levies which may be imposed in the recipient country with respect to the supply of the products and services under the verified contract		•
8	To maintain and use properly and effectively the facilities constructed and equipment provided under the Grant Aid		•
9	To bear all the expenses, other than those to be borne by the Grant Aid, necessary for construction of the facilities as well as for the transportation and installation of the equipment		•

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

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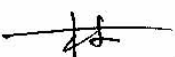
**Minutes of Discussions
on the Basic Design Study
on the Project for Reinforcement of Transmission and Distribution Facilities
in Oyster Bay Substation in the United Republic of Tanzania
(Explanation on the Draft Report)**

In September 2006, Japan International Cooperation Agency (hereinafter referred to as "JICA") dispatched a Basic Design Study Team on the Project for Reinforcement of Transmission and Distribution Facilities in Oyster Bay Substation (hereinafter referred to as "the Project") to the United Republic of Tanzania (hereinafter referred to as "Tanzania") and through discussion, field survey, and technical examination of the results in Japan, JICA prepared a draft report of the study.


In order to explain and consult the Government of Tanzania on the components of the draft report, JICA sent to Tanzania the Draft Report Explanation Team (hereinafter referred to as "the Team"), headed by Mr. Hiroyuki Hayashi, Senior Project Administration Officer, Transportation and Electric Power Team, Project Management Group I, Grant Aid Management Department, JICA and is scheduled to stay in the country from February 25 to March 8, 2007.

As a result of discussions, both sides have confirmed the main items described in the attached sheets.

Dar es Salaam, March 1, 2007

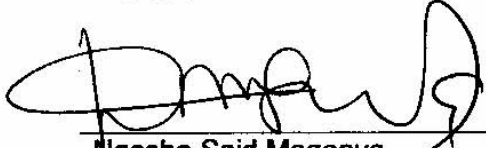
 

Hiroyuki Hayashi
Leader
Basic Design Study Team
JICA





Decklan Mhaiki
General Manager-Transmission
Tanzania Electric Supply Company
Tanzania

Witness:



Ngosha Said Magonya
Commissioner for External Finance
Ministry of Finance
Tanzania

Bashir J. Mrindoko
Commissioner for Energy and
Petroleum Affairs
Ministry of Energy and Minerals
Tanzania



ATTACHMENT

1. Components of the Draft Report

The Tanzanian side agreed and accepted in principle the components of the Draft Report explained by the Team.

2. Japan's Grant Aid Scheme

The Tanzanian side reconfirmed the Japan's Grant Aid scheme and the necessary measures to be taken by the Tanzanian side as explained by the Basic Design Study Team in September 2006 and described in the Annex 3 of the Minutes of Discussions signed by both sides on September 19, 2006.

3. Schedule of the Study

JICA will complete the Final Report in accordance with the confirmed items and send it to the Tanzanian side before the end of April 2007.

4. Other Relevant Issues

4-1. The Tanzanian side confirmed that the following major undertakings should be taken by the Tanzanian side at its own expenses.

- (1) To accelerate all the necessary procedures for the Project such as the custom clearance, tax exemption, etc.
- (2) To secure the temporary storage and construction yard, disposal site of soil and discharged water, etc. for the construction.
- (3) To relocate the existing structure in the proposed construction area such as warehouse, antenna tower store, etc. in the Ubungo Substation
- (4) To make necessary arrangements in the New Oyster Bay Substation land for the construction such as land reclamation, construction of access road and boundary fence
- (5) To relocate the existing 33kV distribution line on the 132kV transmission line corridor along the Sam Nujoma Road
- (6) To relocate the existing buried infrastructures along the Sam Nujoma Road, where the foundation of monopoles for 132kV transmission line will be installed.
- (7) To make the necessary public notice of scheduled power interruption during the construction and make an appropriate response to the residents living around the construction site.

4-2. Both sides confirmed that the EIA procedures are on the way of final approval (see attachment) and that the Tanzanian side should submit the copy of certificate to the JICA Tanzania Office after the completion of the EIA procedures as soon as possible.

4-3. Both sides confirmed that the procedures of the ownership transfer from private to TANESCO for the land of the New Oyster Bay substation is on the way of final stage that the Tanzanian side should submit the copy of land certificate to the JICA Tanzania Office after the completion of the said procedures as soon as possible.

4-4. Both sides reconfirmed that the position of street lighting is shifted to the center for the Sam Nujoma Road. TANESCO shall submit the design drawing of the street lighting pole prepared by TANROADS as soon as possible.

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- 4-5. Both parties confirmed that the position of monopoles of 132kV transmission lines shall be in accordance with "Material of Discussion on 132kV transmission pole (monopole) location" which was agreed between TANROADS and the Japanese consultant on December 20, 2006 (refer to Attachment of Draft Report).
- 4-6. Both parties confirmed that the name of "New Oyster Bay Substation" or other feeder's is not permanent. TANESCO can change the name at appropriate timing.
- 4-7. The Team handed one copy of the draft detailed specifications of equipment and materials to be procured. Both sides agreed that the draft specifications were confidential and should not be duplicated or released to any outside parties.

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NATIONAL ENVIRONMENT MANAGEMENT COUNCIL (NEMC)
BARAZA LA TAIFA LA HIFADHI NA USIMAMIZI WA MAZINGIRA

Tel. No. Direct line: 255 (022) 2134803
Tel: 255 (022) 2127817
Mobile: 0741 - 608930
Fax: 255 (022) 2111579
E-mail address: nema@nemctz.org

DEPR

Tencot House (3rd floor),
Sokoine Drive,
P.O. Box 63154,
DAR ES SALAAM,
TANZANIA

In reply please quote:

Ref: NEMC/04/20/Vol.II

Date: 31st January 2007

The Resident Representative
JICA
P.O. Box 9450
Dar es Salaam

Attn: Ms. Asuka *Asuka*



Dear Madame,

RE: ENVIRONMENTAL IMPACT ASSESSMENT CERTIFICATE FOR THE PROPOSED TANESCO DISTRIBUTION AND TRANSMISSION REHABILITATION PROJECT - DAR ES SALAAM, MOSHI AND ARUSHA

Please refer to the above captioned subject

This is to inform you that M/S TANESCO Ltd submitted to the National Environment Management Council an Environmental Impact Assessment (EIA) Report for the above mentioned project. The objective of this submission was to obtain EIA Certificate as stipulated by the Environmental Management Act No. 20 of 2004 in Section 81 (1).

We would like to inform you and all concerned parties, that this EIA Report and Resettlement Action Plan (RAP) were reviewed by a cross-sectoral Technical Advisory Committee (TAC) from 10th - 11th August 2005 and 26/10/2005 respectively. As a matter of procedure four members of the TAC conducted a site verification visit in August 2005.

Taking into account the findings of the TAC, the Site Visit report and the corrections made in the final version of the EIA report, it was concluded that the EIA Report of the proposed activity, including its Environmental Management Plan and Monitoring Plan (EMP & MP) respectively, are of a high standard, but needed to be re-casted in order to conform with the format stipulated by the EIA and Audit Regulations of 2005.

All correspondence should be addressed to the Director - General

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TANESCO Ltd submitted the improved final version in January 15, 2007. The Council has just completed review of the same and is finalizing procedures to submit it the Minister responsible for Environment for formal approval and issuance of EIA Certificate. Certainly, the Council regrets for these procedural developments which caused delay and inconvenience to all concerned parties.

Consequently, by this letter the Council would like to inform JICA and other interested stakeholders that it has **no objection** to your esteemed organisation's intention to proceed with disbursement of funds for implementing this project, which is of national interest.

Thank you for your continued cooperation.

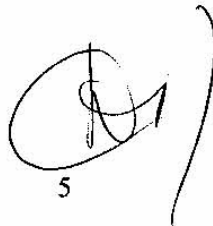
Yours sincerely,


A. Maembe
For Acting Director General

Cc: The Managing Director
TANESCO Ltd
P.O. Box 9024
Dar es Salaam






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資料-5 事業事前計画表(基本設計時)

事業事前計画表(基本設計時)

1. 案件名
タンザニア連合共和国 オイスターベイ送配電施設強化計画
2. 要請の背景（協力の必要性・位置付け）
<p>タンザニア連合共和国（以下「タ」と称す）では近年電力需要が急増しており、特に全需要の40%を占めるダルエスサラーム市では、過去数年7%程度の高い伸び率を示している。「タ」国の電気事業は、エネルギー資源省の監督の下、TANESCO（Tanzania Electric Supply Company）が発送配電事業を一貫して実施している。TANESCOではドナーからの資金協力により、発電設備や全国連系送電線の増強を着実に実施してきたものの、送・変・配電設備の整備については、1980年代前半の経済状況悪化による予算不足などの理由から極端に遅れている。このため、独立直後に据付けられた、都市部の送・変・配電設備は、長期に亘り過負荷運転を強いられており、各地で停電事故が多発するばかりか、電力損失が増加し、電力の安定供給並びに設備の効率的運用に重大な支障をきたしている。</p> <p>送・変・配電設備の施設計画については、JICAが2002年に実施した「主要都市配電設備リハビリテーション調査」でも、主要都市の電力供給が改善され地域経済が発展することを目標とし、ダルエスサラーム市に二次変電所、配電用変電所、132kV送電線、33kV配電線を増設することが提言されている。しかしながら電力セクター民営化の動きから、TANESCOへの援助、投資が停滞したこともあり、2002年以降電力配電網の増強はほとんど実施されていない。</p> <p>オイスターベイ地区はダルエスサラーム市の北東部、キノンドニ行政区に属し、隣接するムササニ地区と共に、公共施設、商業施設、中小工場等が急速に拡大し、経済的にも社会活動の観点からも、同市の重要な拠点となっている。同地区では、現在ウブンゴとイララの2つの変電所から33kV配電線により受電しているが、変電所の変圧器、並びに配電線容量は既に過負荷となっており、また変電所が分散配置されていないことから、停電事故が長期化する傾向にある。</p> <p>本計画は、「主要都市配電設備リハビリテーション調査」の提言を実施するため、ダルエスサラーム市北部地区に新オイスターベイ変電所（132/33kV）を建設し、関連する132kV送電線、33/11kV配電線を整備するものである。これらの設備が建設されれば、市内の変電容量が増加し、過負荷を解消すると共に、将来的には同市の132kV環状送電線を形成することで、オイスターベイ、ムササニ地区のみならず、首都の基幹送電網形成の拠点となり、供給信頼度を向上することが期待されている。</p>
3. プロジェクト全体計画概要
<p>(1) プロジェクト全体計画の目標（裨益対象の範囲及び規模）</p> <p>ダルエスサラーム市全域において、安定した電力供給が確保され、住民生活の向上並びに公共施設の安定した運営、社会経済活動の活性化を図る</p> <p>《裨益対象の範囲及び規模》</p> <p>ダルエスサラーム市全域、住民約250万人。</p> <p>(2) プロジェクト全体計画の成果</p> <ol style="list-style-type: none">1) ダルエスサラーム市キノンドニ地区に変電所が建設される。2) キノンドニ地区に、電力が供給される。3) 公共施設に電力が供給される。その結果、地域社会活動が活性化する。4) 一般住宅、商店等に電力が供給される。その結果地域経済が活性化する。 <p>(3) プロジェクト全体計画の主要活動</p> <ol style="list-style-type: none">1) 新オイスターベイ変電所を建設する。2) ウブンゴ変電所引出設備とウブンゴ～新オイスターベイ変電所間132kV送電線を建設する。3) 新オイスターベイ変電所と周辺の配電用変電所を配電線で連系する。4) 上記の変電・配電設備を使用して電力供給を行う。 <p>(4) 投入（インプット）</p>

<p>1) <u>日本側：無償資金協力 18.07 億円</u></p> <p>2) 相手国側</p> <p>a) 施設建設用地の提供</p> <p>b) 施設建設の準備工事の実施（既設インフラの移設等）</p> <p>c) 運転・維持管理要員</p> <p>d) 調達された設備の運転・維持管理費用</p> <p>(5) 実施体制</p> <p>1) 主管官庁： エネルギー鉱山省（MEM）</p> <p>2) 実施機関： タンザニア電力公社（TANESCO）</p>												
<p>4. 無償資金協力案件の内容</p>												
<p>(1) サイト タンザニア市 キノンドニ地区、サムニユジョマ道路（ウブンゴ～ムウエンゲ）、ニューバガモヨ道路（ムウエンゲ～ビクトリア）</p> <p>(2) 概要 132kV、33kV、11kV 送変電資機材の調達と据付</p> <p>(3) 相手国側負担事項 変電所敷地造成、送電線ルート/site準備（既設インフラ設備の撤去、33kV 配電線設備の移設、仮設工事用地の確保）、33kV 及び 11kV 配電線設備の据付工事等</p> <p>(4) 概算事業費 約 18.54 億円（無償資金協力 約 18.07 億円、「タ」国側負担 約 0.47 億円）</p> <p>(5) 工期 実施設計・入札期間を含め約 31 ヶ月（予定）</p> <p>(6) 貧困、ジェンダー、環境及び社会面の配慮 132kV 送電線および変電所工事については、「タ」国の EIA 審査が終了しており、環境ライセンスが発行されることを確認した。設備の建設にあたり、周辺への影響を最小化する工法を採用することとした。変電所用地は TANESCO が取得済み、送電線用地は政府が保有しており、道路拡幅のため TANROADS とダルエスサラーム市が住民移転を進め、道路用地のうち 3m がインフラ設備用として用意され、ここを送電線建設に利用できることを確認した。</p>												
<p>5. 外部要因リスク</p>												
<p>特になし</p>												
<p>6. 過去の類似案件からの教訓の活用</p>												
<p>特になし</p>												
<p>7. プロジェクト全体計画の事後評価に係る提案</p>												
<p>(1) プロジェクト全体計画の目標達成を示す成果指標</p> <table border="1"> <thead> <tr> <th>項目</th> <th>現状（2006年）</th> <th>計画後（2010年）</th> </tr> </thead> <tbody> <tr> <td>ダルエスサラーム市の変電容量</td> <td></td> <td></td> </tr> <tr> <td>(1) 132/33kV</td> <td>350MVA</td> <td>440MVA</td> </tr> <tr> <td>(2) 33/11kV</td> <td>415MVA</td> <td>445MVA</td> </tr> </tbody> </table> <p>(2) その他の成果指標 売電電力量、電力損失、ロードシェディングを含む停電時間など</p> <p>(3) 評価のタイミング 2010 年以降</p>	項目	現状（2006年）	計画後（2010年）	ダルエスサラーム市の変電容量			(1) 132/33kV	350MVA	440MVA	(2) 33/11kV	415MVA	445MVA
項目	現状（2006年）	計画後（2010年）										
ダルエスサラーム市の変電容量												
(1) 132/33kV	350MVA	440MVA										
(2) 33/11kV	415MVA	445MVA										

資料-6 収集資料リスト

収集資料リスト

調査名: タンザニア連合共和国 オイスターベイ送配電施設強化計画 基本設計調査

番号	名称	形態 図書・ビデオ・地図 ・写真等	オリジナル・コピー	発行機関	発行年
1	Single Line Diagram Ubungo 220/132/33/11kV S/S	図面	コピー	ABB	2001
2	Rehabilitation of New Bagamoyo Road	図面	コピー	Stewart Scett	
3	Work Schedule preliminary	図書	コピー	WB	
4	Transmission and Distribution Strengthening and Upgrade	図書	コピー	WB	
5	TANESCO Financial Recovery Plan 2006-2010	図書	コピー	TANESCO	2006
6	Songo Songo Gas Development and Generation Project	図書	コピー	TANESCO	
7	Generation Plans	図書	コピー	TANESCO	
8	Underground Utility Map(TTCL)	図面	コピー	TANESCO	
9	Schedule of maintenance of Transmission Line	図書	コピー	TANESCO	
10	Organization Structure Transmission Department	図書	コピー	TANESCO	
11	新変電所用測量図面	図面	コピー	TANESCO	
12	Report of Tropical Storm “Lily”	図面	コピー	East African Metrological Department	1967

番号	名称	形態 図書・ビデオ・地図 ・写真等	オリジナル・コピー	発行機関	発行年
13	バス路線計画図	図面	コピー	Inerbeton	
14	The National Energy Policy	図面	コピー	Ministry of Energy and Mineral	2002
15	TANESCO Financial Recovery Plan 2006-2010	図書	コピー	TANESCO	2006
16	Sam Nujoma Road ムウエンゲバスターミナル計画図	図面	コピー	Kinondoni Municipal Council	2006
17	Sam Nujoma Road 配電線移設計画図	図面	コピー	TANROAD	
18	TANESCO 財政実績と見通し	図面	コピー	TANESCO	2005
19	ニューバガモヨ道路敷地境界図	図面	コピー	TANESCO	
20	キノンドニ地区 11kV 負荷リスト	図書	コピー	TANESCO	
21	KAUDA Maintenance Report	図書	コピー	TANESCO	2005
22	キノンドニ地区 11kV 配電系統図	図面	コピー	TANESCO	1998
23	Distribution Construction Hnad Book	図書	コピー	TANESCO	
24	Specification S14 Insulations	図書	コピー	TANESCO	2006
25	Sam Nujoma Road 計画図	図書	コピー	TANROAD	

番号	名称	形態 図書・ビデオ・地図 ・写真等	オリジナル・コピー	発行機関	発行年
26	Annual Report and Account	図書	オリジナル	Tanzania Harbours Authority	2004
27	Ports Handbook	図書	オリジナル	Tanzania Harbours Authority	2005
28	上水道設備位置図(スケッチ)	図面	コピー	DAWASCO	
29	General Road Design Draft Final Report	図書	コピー	Dar es sallam City Council	2006
30	11kV Distribution Network drawing	図面	コピー	TANESCO	
31	Dar es sallam Water Supply and Sanitation project CP5	図書	コピー	DAWASA	2003
32	Dar es sallam Water Supply and Sanitation project CP3	図書	コピー	DAWASA	2003
33	Upgrading of Sam Nujoma Road Layout Plan	Autocad 図面	コピー	NORPLAN TANZANIA	2007

資料-7

自然条件調査結果

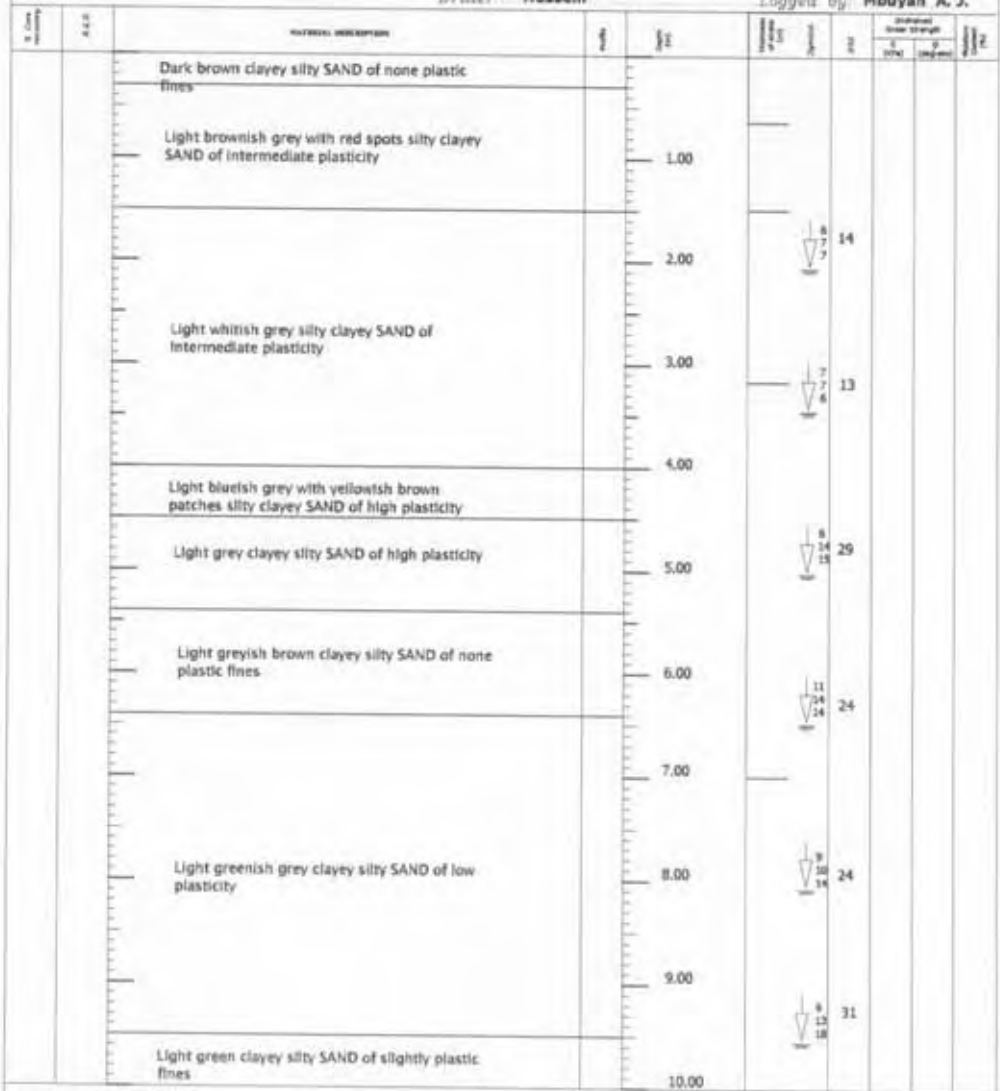
(サンプル)

DRILLING RECORD

Drill casing type	Size	Metres
NIL		

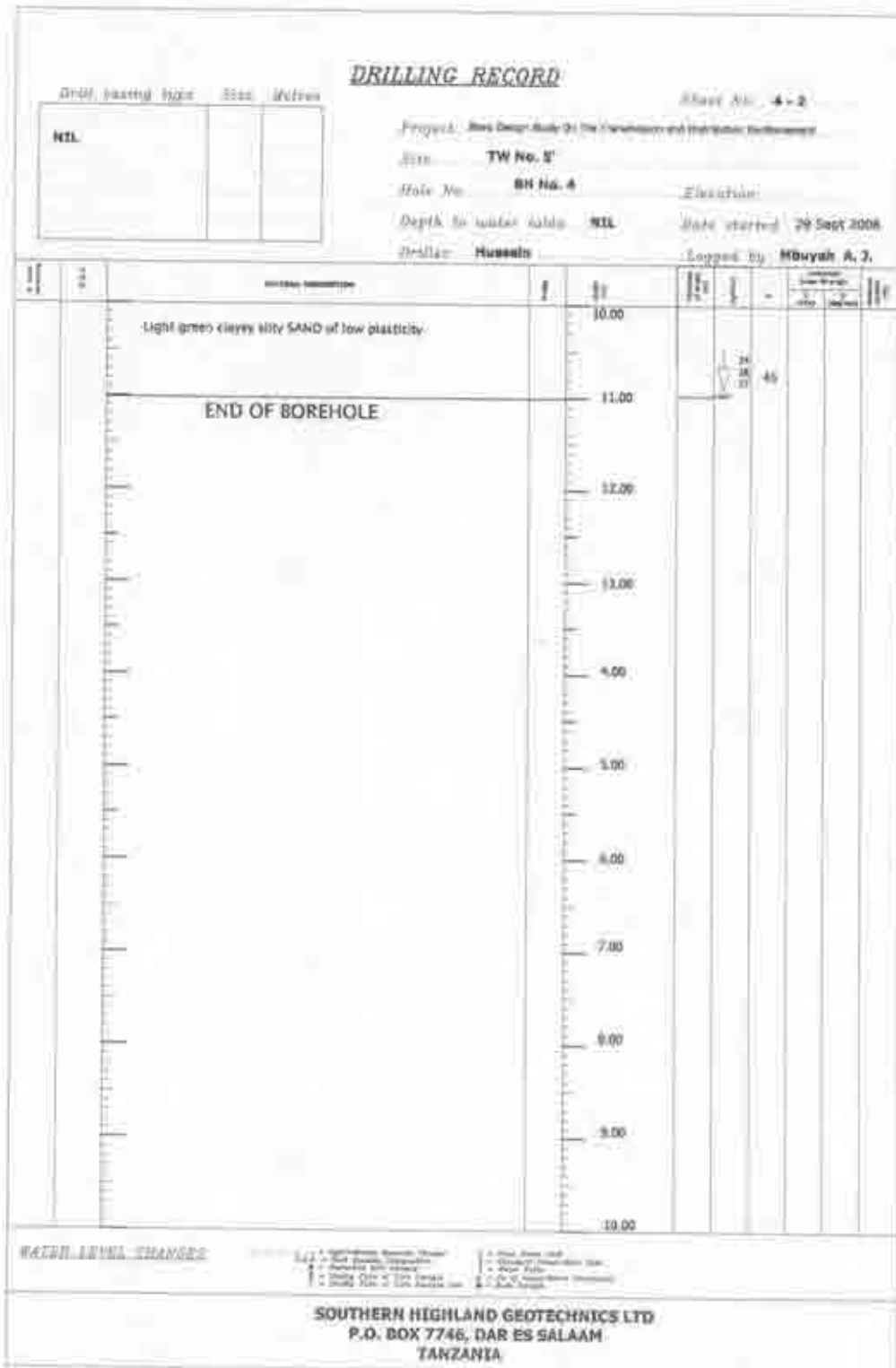
Sheet No: 4-1

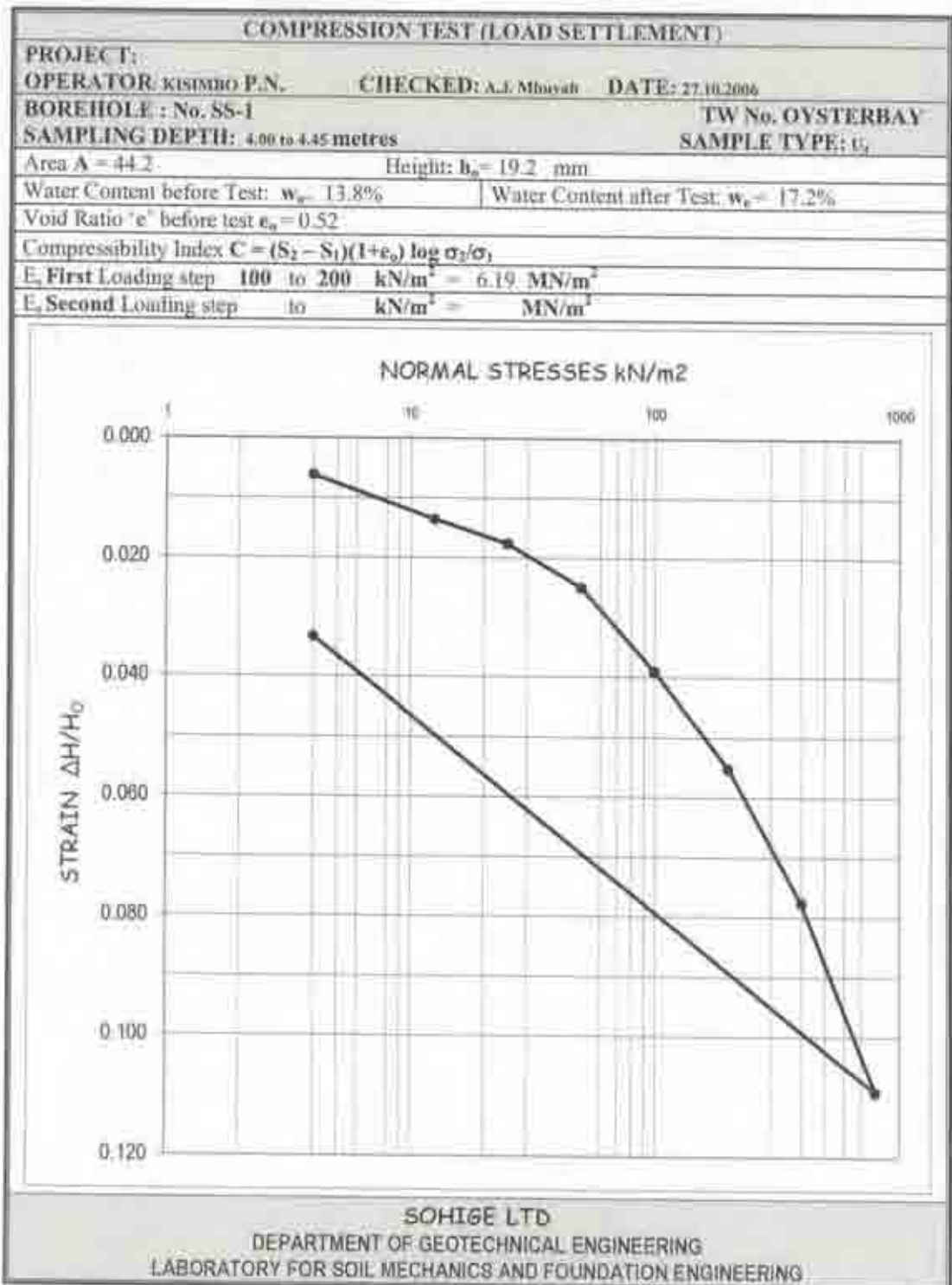
Project: Basic Design Study On The Transmission and Distribution Reinforcement
 Site: TW No. 5
 Hole No: BH No. 4 Elevation:
 Depth to water table: NIL Date started: 29 Sept 2006
 Driller: Hussein Logged by: Mbuyah A. J.



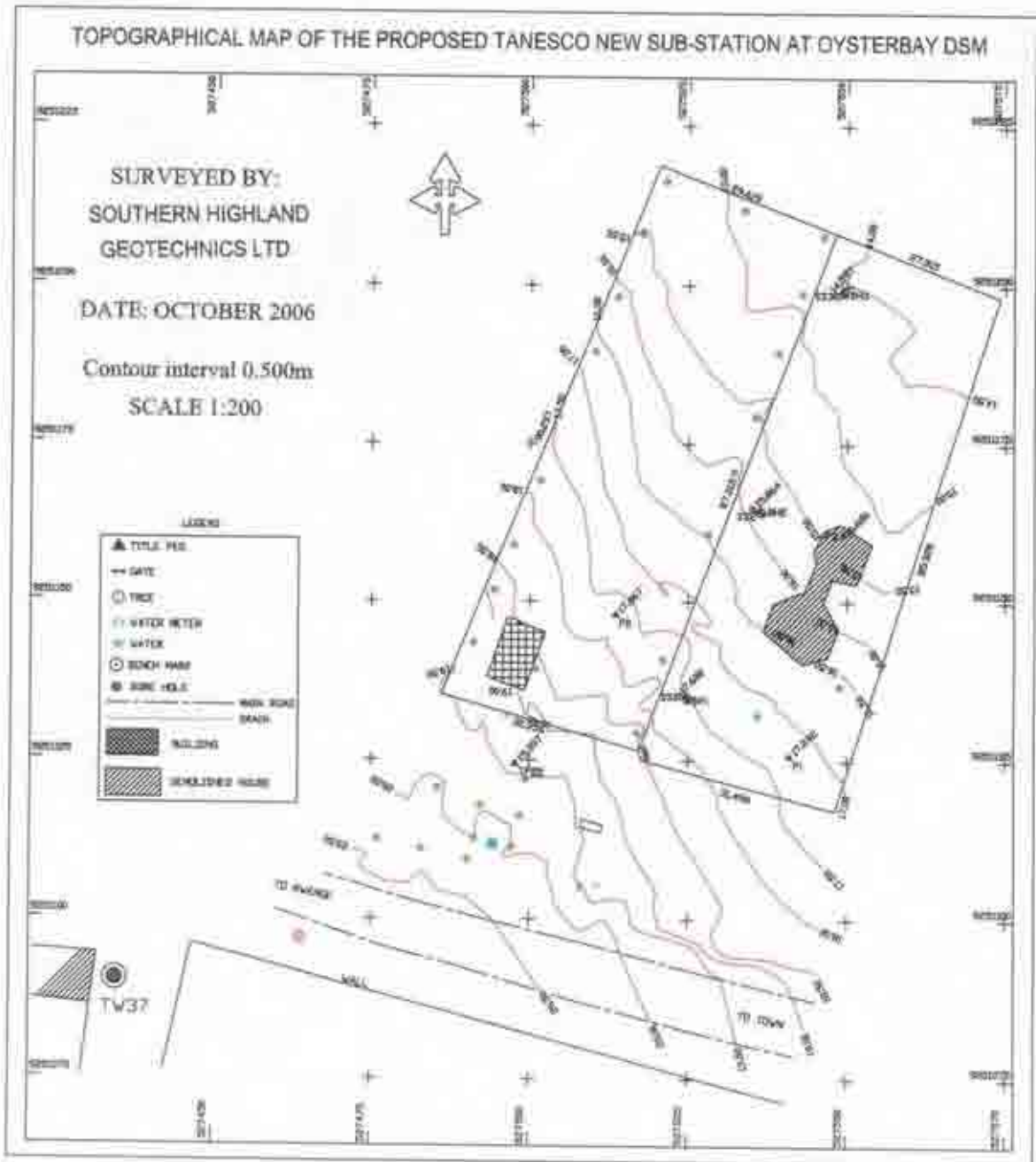
WATER LEVEL CHANGES
 - - - - - Approximate Water Table
 A-42 = Rock Drilling Temperature
 * = Observed Soil Sample
 † = Shallow Hole or Core Sample
 ‡ = Shallow Hole or Core Sample lost
 □ = Core Sample Test
 ⊕ = Sliding Penetration Test
 ⊖ = Riser Tube
 ⊙ = No of Minus/Minus Penetration
 ⊛ = Push Sample

SOUTHERN HIGHLAND GEOTECHNICS LTD
 P.O. BOX 7746, DAR ES SALAAM
 TANZANIA





地形図
 (新オイスターベイ変電所)



資料-8 モノポール建柱位置に関する
TANROADS との協議結果

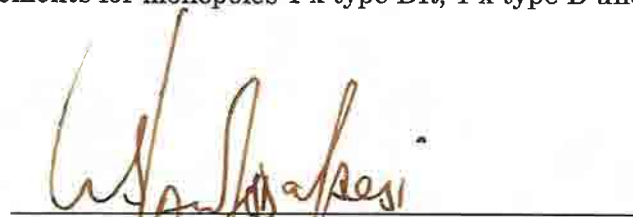
Material for Discussion
on 132kV transmission pole (monopole) location
for Basic Design Study on the Project
for Reinforcement of Transmission and Distribution
in Oyster Bay Substation

20th DECEMBER 2006

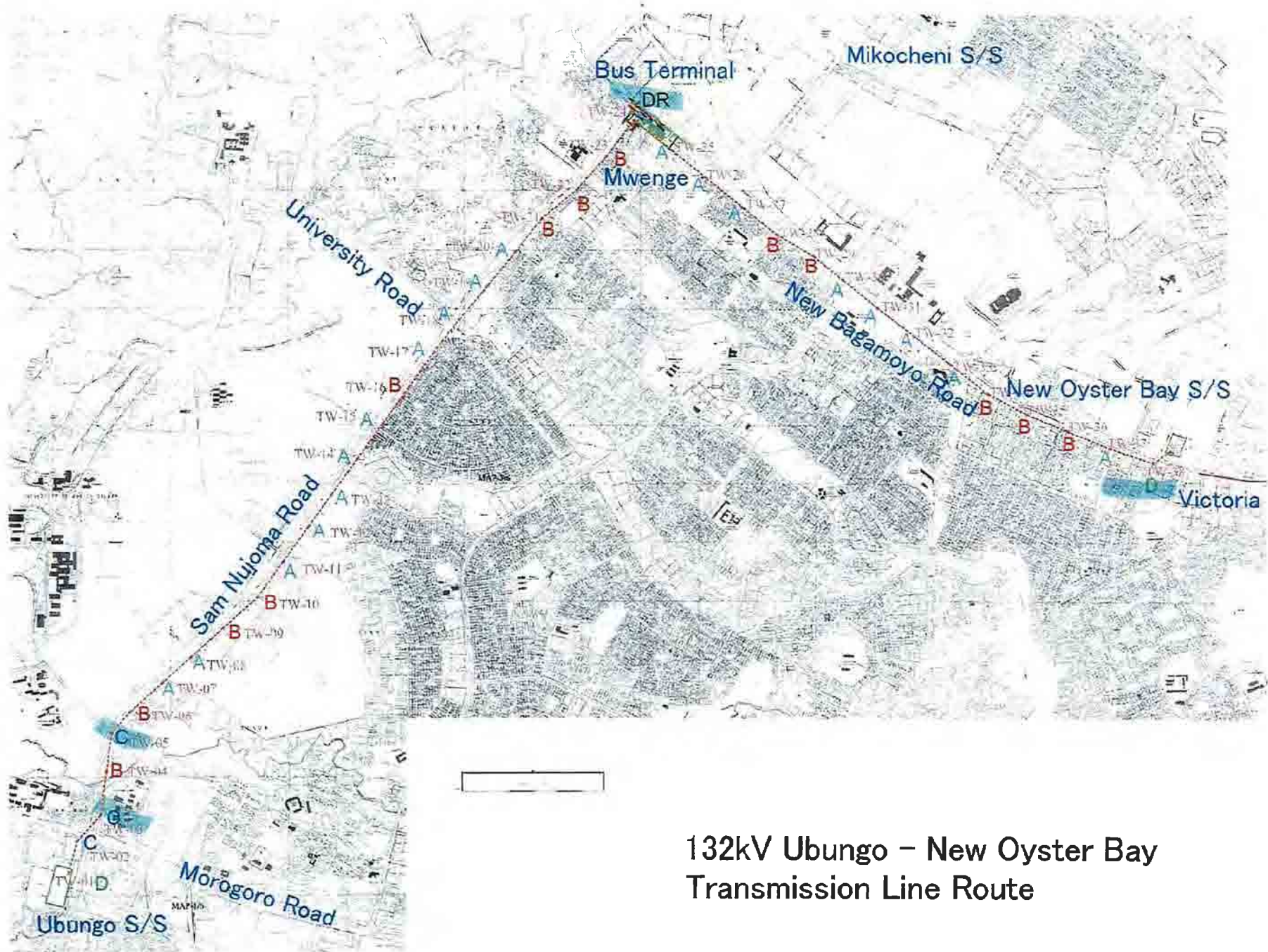
*In principle, TANROADS agreed at a meeting at JICA HQ Tokyo on 20th December 2006 at 10:30 hours that TANROADS will work with TANESCO and the project consultant to accommodate requirements for monopoles 1 x type DR, 1 x type D and 2 x type C (Total 4 numbers).



Mr. Masatsugu Komiya
Leader of Consultant Team
Basic Design Study Team JICA



Dr. FY Addo Abedi
Chief Executive officer
TANROADS

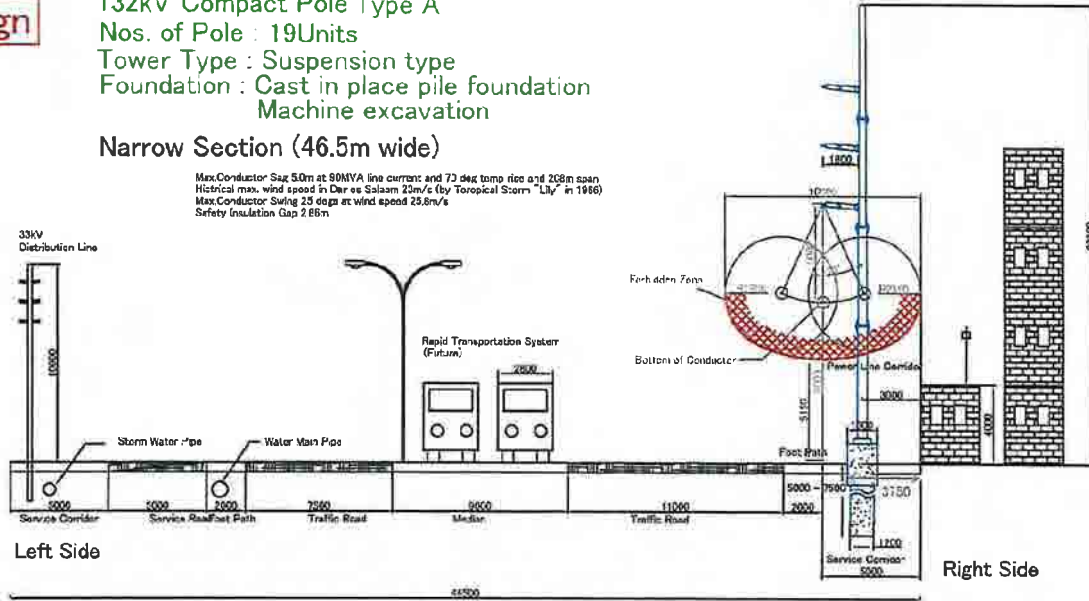


132kV Ubungo - New Oyster Bay
Transmission Line Route

Original Design

132kV Compact Pole Type A
 Nos. of Pole : 19Units
 Tower Type : Suspension type
 Foundation : Cast in place pile foundation
 Machine excavation
 Narrow Section (46.5m wide)

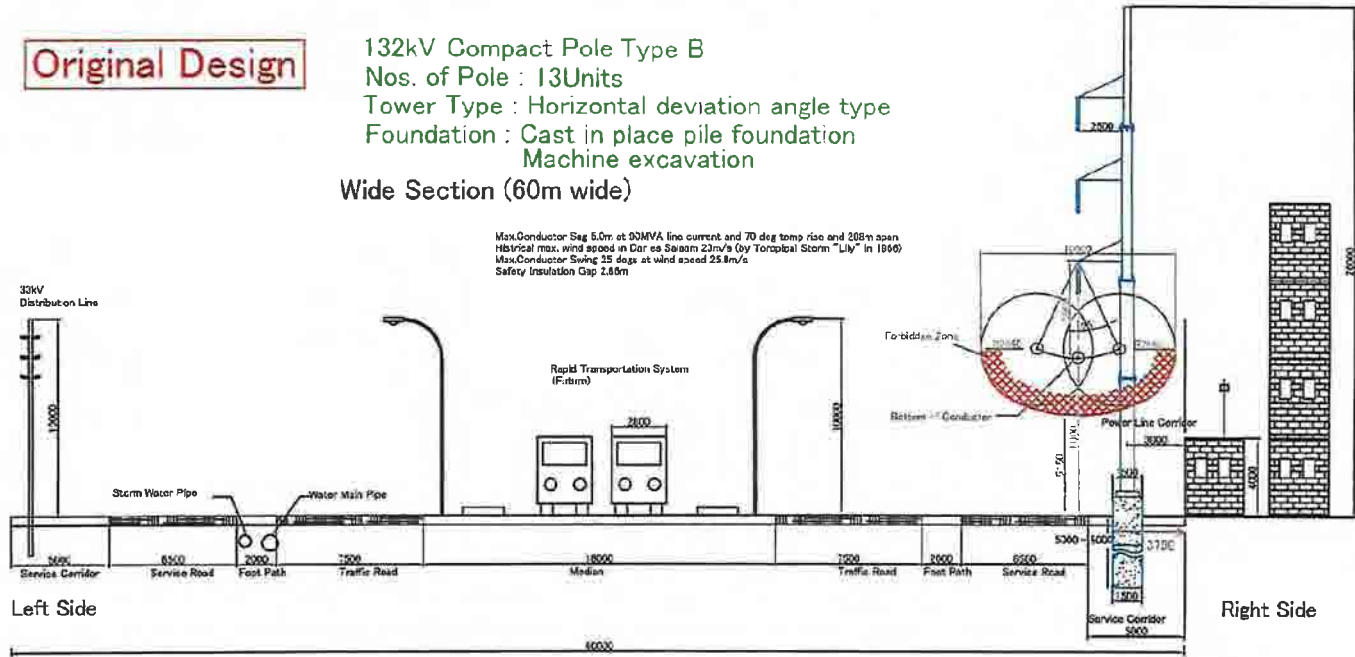
Max.Conductor Sag 5.0m at 90MVA line current and 73 deg temp rise and 208m span
 Historical max. wind speed in Dar ee Salaam 23m/s (by Tropical Storm "Lily" in 1966)
 Max.Conductor Swing 25 degs at wind speed 25.8m/s
 Safety Insulation Gap 2.66m



Original Design

132kV Compact Pole Type B
 Nos. of Pole : 13Units
 Tower Type : Horizontal deviation angle type
 Foundation : Cast in place pile foundation
 Machine excavation
 Wide Section (60m wide)

Max.Conductor Sag 5.0m at 90MVA line current and 70 deg temp rise and 268m span
 Historical max. wind speed in Dar ee Salaam 23m/s (by Tropical Storm "Lily" in 1966)
 Max.Conductor Swing 25 degs at wind speed 25.8m/s
 Safety Insulation Gap 2.88m

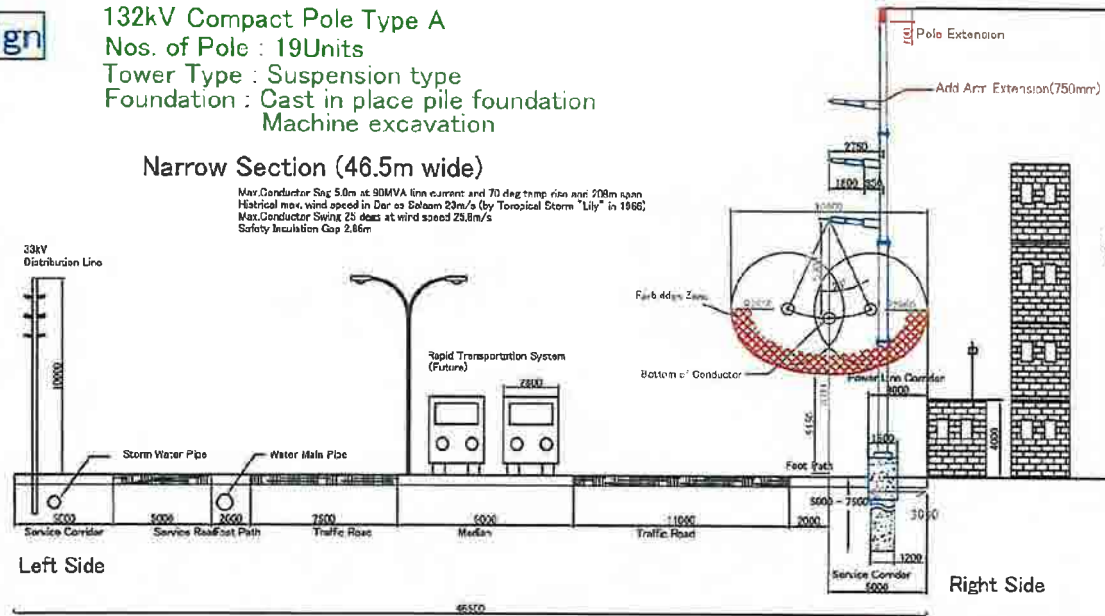


Revised Design

132kV Compact Pole Type A
 Nos. of Pole : 19Units
 Tower Type : Suspension type
 Foundation : Cast in place pile foundation
 Machine excavation

Narrow Section (46.5m wide)

Max.Conductor Sag 5.0m at 90MVA line current and 70 deg temp rise and 203m span
 Historical max. wind speed in Dar es Salaam 23m/s (by Tropical Storm "Lily" in 1988)
 Max.Conductor Swing 25 degs at wind speed 23.8m/s
 Safety Insulation Gap 2.86m



Left Side

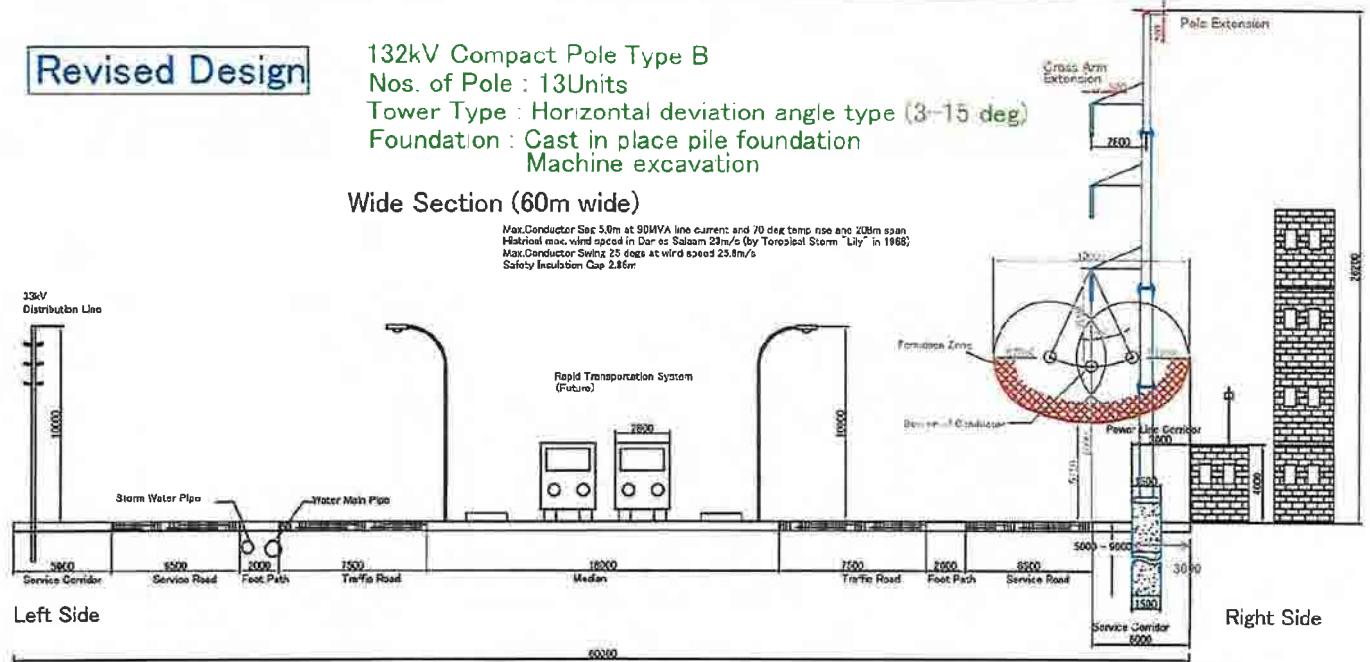
Right Side

Revised Design

132kV Compact Pole Type B
 Nos. of Pole : 13Units
 Tower Type : Horizontal deviation angle type (3-15 deg)
 Foundation : Cast in place pile foundation
 Machine excavation

Wide Section (60m wide)

Max.Conductor Sag 5.0m at 90MVA line current and 70 deg temp rise and 203m span
 Historical max. wind speed in Dar es Salaam 23m/s (by Tropical Storm "Lily" in 1988)
 Max.Conductor Swing 25 degs at wind speed 23.8m/s
 Safety Insulation Gap 2.86m



Left Side

Right Side

Revised Design

132kV Compact Pole Type D

Nos. of Pole : 2 Units TW-01 (Ubungo), TW-38 (New Oyster Bay)

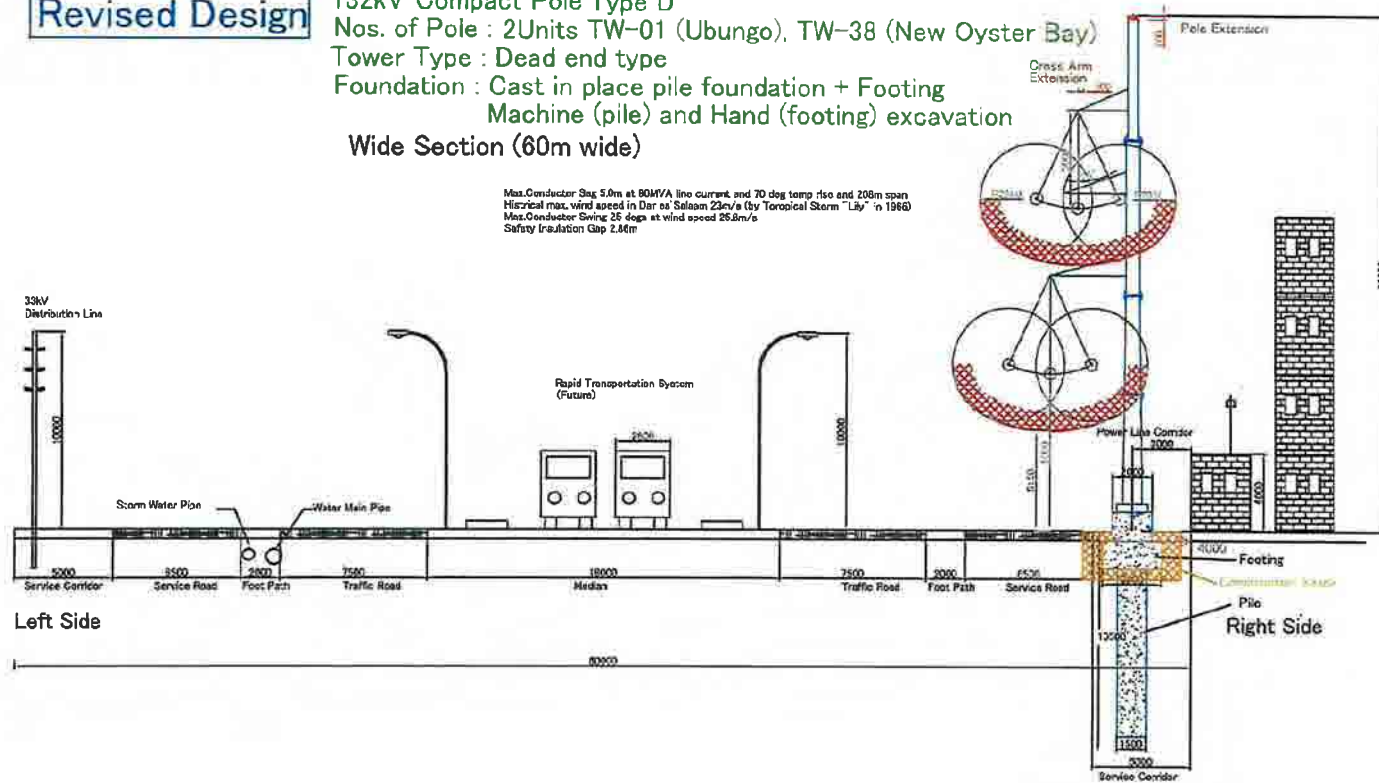
Tower Type : Dead end type

Foundation : Cast in place pile foundation + Footing

Machine (pile) and Hand (footing) excavation

Wide Section (60m wide)

Max. Conductor Sag 5.0m at 80MVA line current and 70 deg temp rise and 208m span
 Historical max. wind speed in Dar es Salaam 23m/s (by Tropical Storm "Lay" in 1966)
 Max. Conductor Swing 25 degs at wind speed 25.5m/s
 Safety Insulation Gap 2.66m



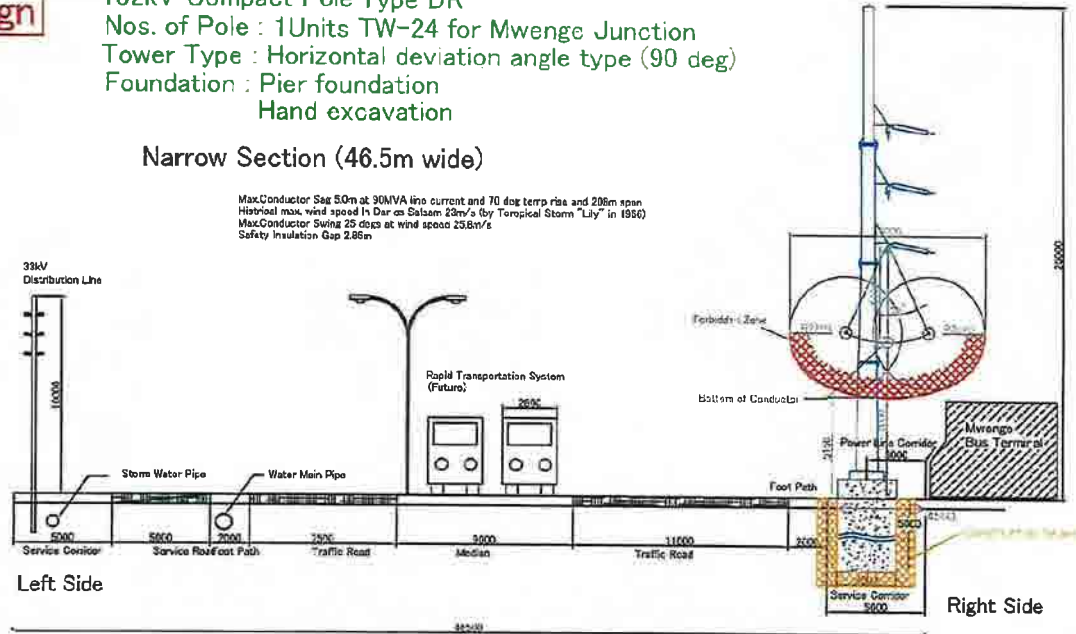
A-8-5

Original Design

132kV Compact Pole Type DR
 Nos. of Pole : 1Units TW-24 for Mwenge Junction
 Tower Type : Horizontal deviation angle type (90 deg)
 Foundation : Pier foundation
 Hand excavation

Narrow Section (46.5m wide)

Max.Conductor Sag 50m at 90MVA line current and 70 deg temp rise and 206m span
 Historical max. wind speed in Dar es Salaam 23m/s (by Tropical Storm "Lily" in 1956)
 Max.Conductor Swing 25 degs at wind speed 25.8m/s
 Safety Insulation Gap 2.65m



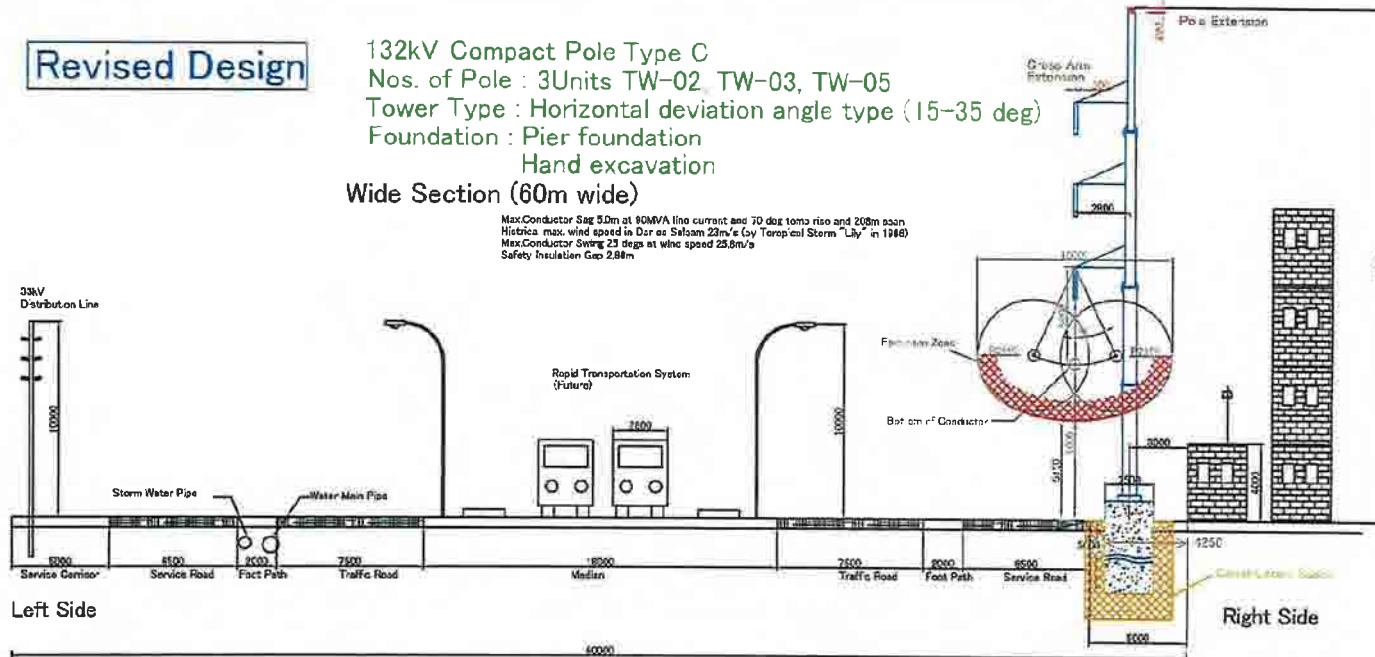
A-8-6

Revised Design

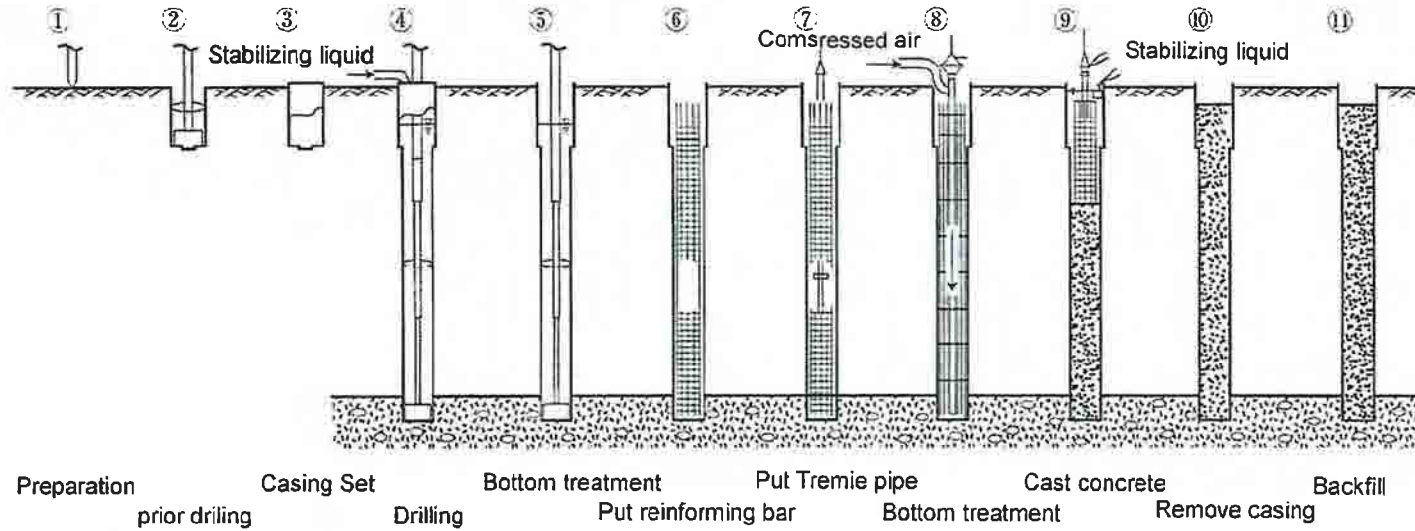
132kV Compact Pole Type C
 Nos. of Pole : 3Units TW-02, TW-03, TW-05
 Tower Type : Horizontal deviation angle type (15-35 deg)
 Foundation : Pier foundation
 Hand excavation

Wide Section (60m wide)

Max.Conductor Sag 50m at 90MVA line current and 70 deg temp rise and 206m span
 Historical max. wind speed in Dar es Salaam 23m/s (by Tropical Storm "Lily" in 1956)
 Max.Conductor Swing 25 degs at wind speed 25.8m/s
 Safety Insulation Gap 2.68m



Construction of Cast in place pile foundation



A-8-7

Construction of Pier foundation



1. Hand Excavation



2. Placing liner plate



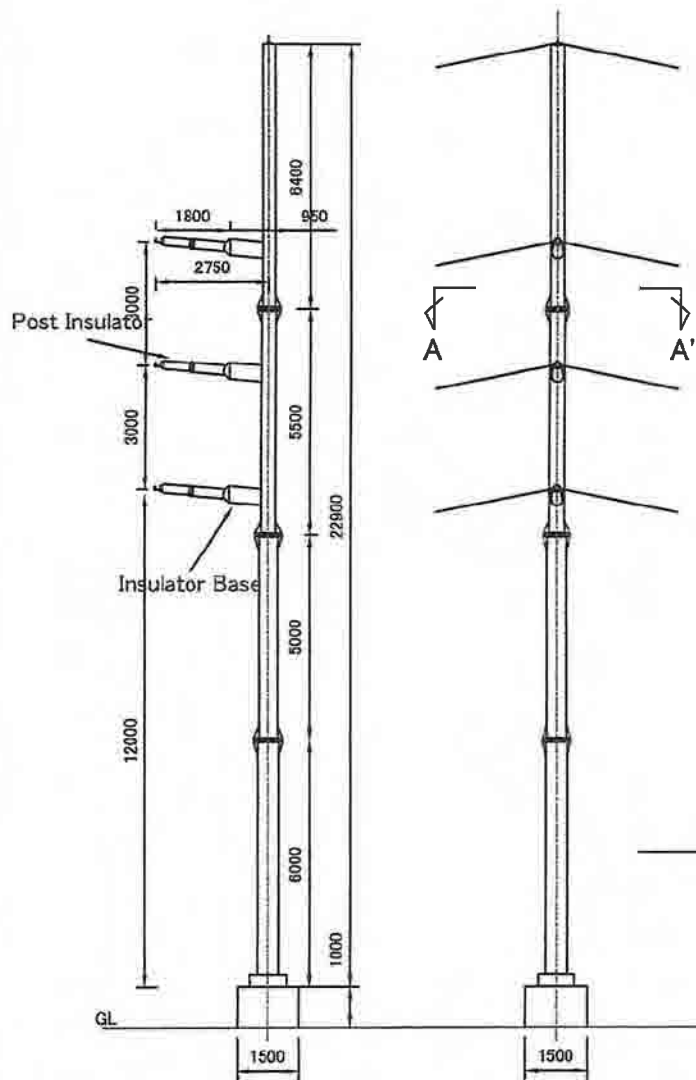
3. Casting concrete

Material Monopole: Carbon steel, Cross arm: Rolled steel
 Surface finishing Hot dip galvanized

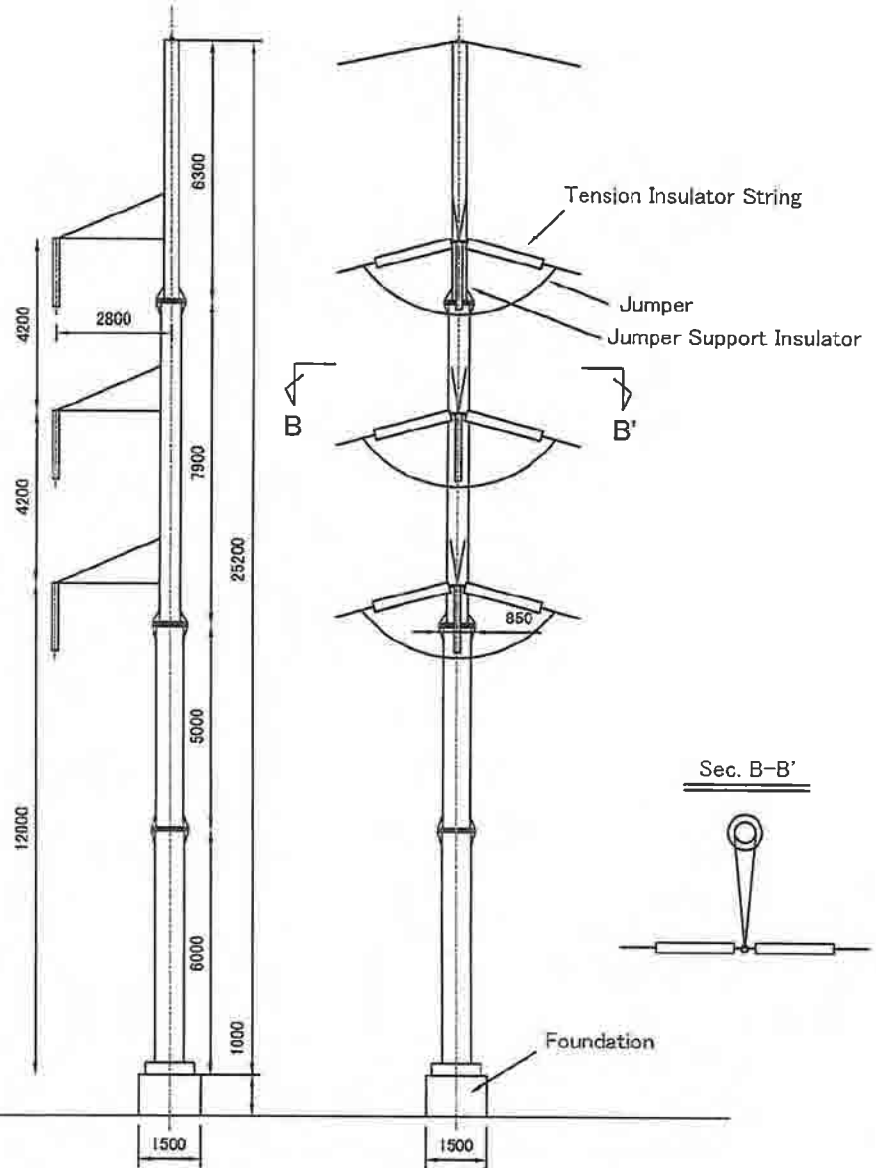
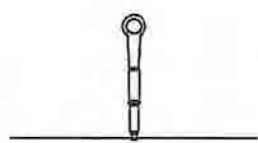
Type A (Suspension 0 - 3 deg)

Type B (Tension H. D. A. 3 - 15 deg)

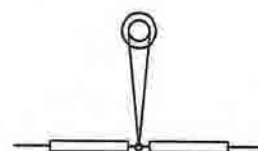
8-8-V



Sec. A-A'



Sec. B-B'



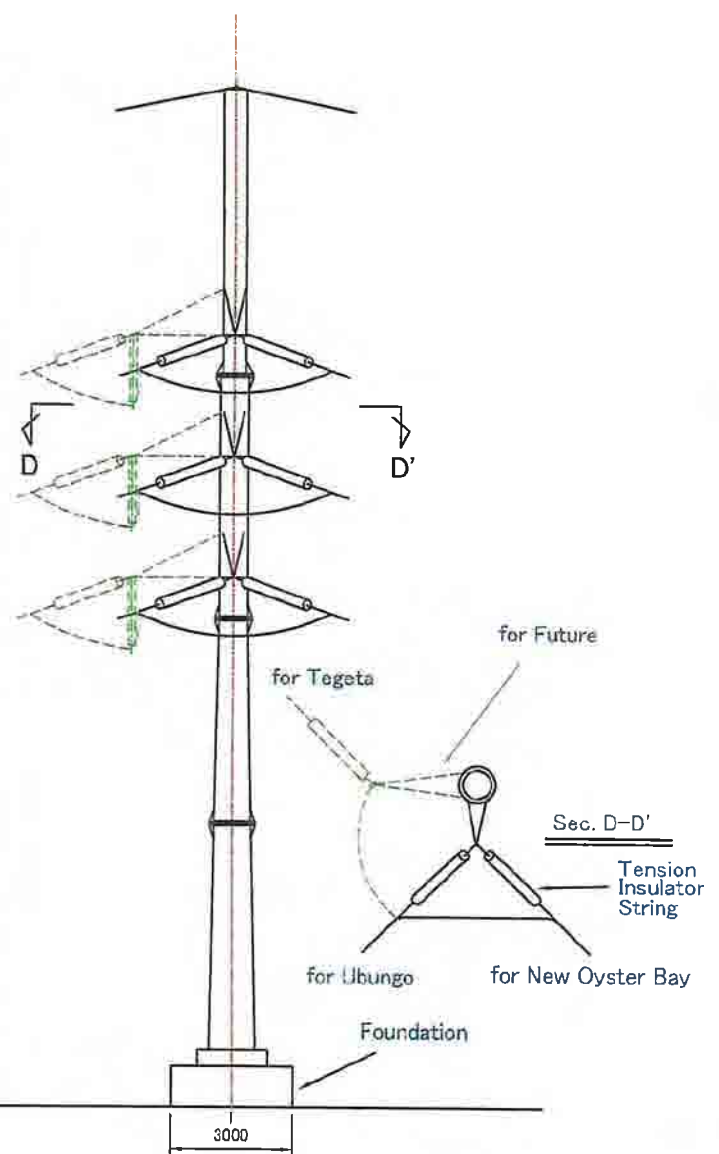
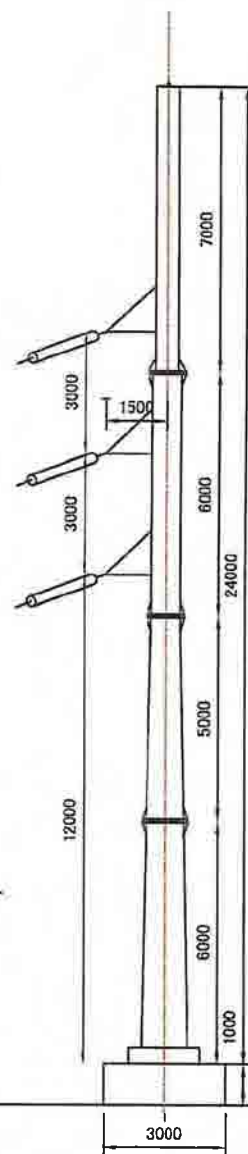
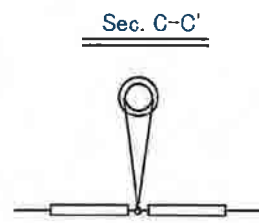
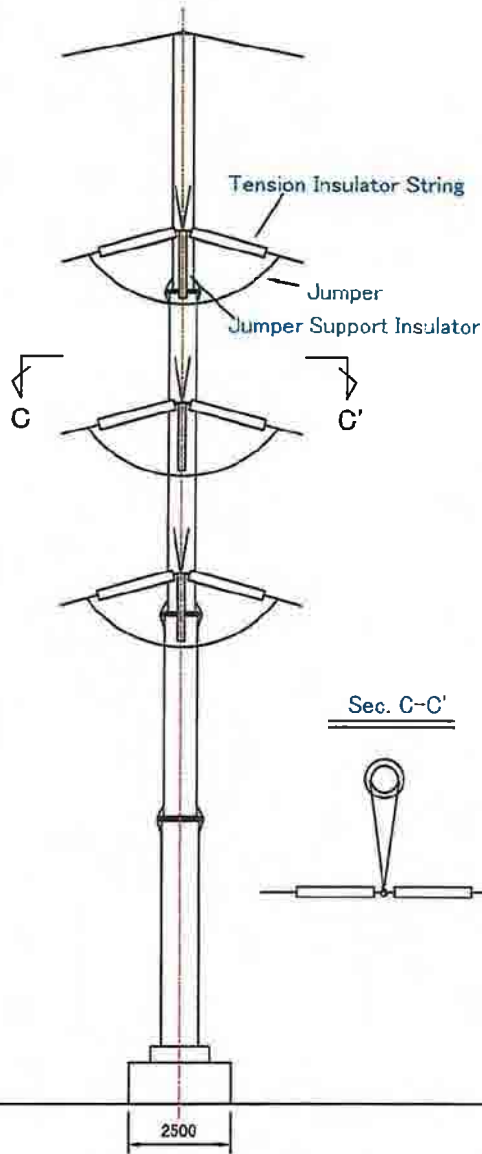
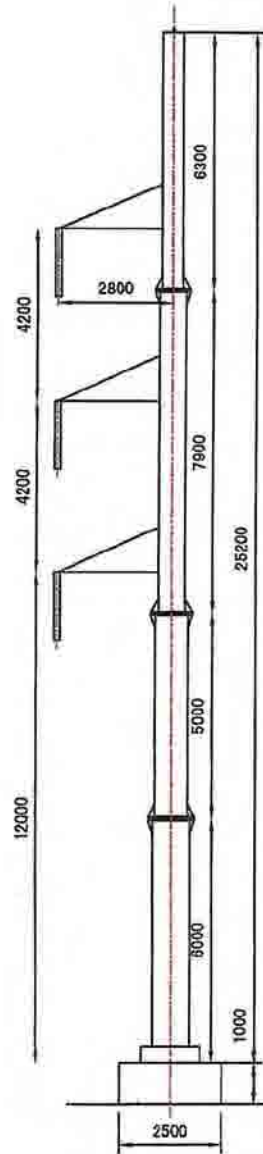
TL-G09A: 132kV Compact monopole (Type A Type B)

6-8-9

Material Monopole: Carbon steel, Cross arm: Rolled steel
Surface finishing Hot dip galvanized

Type C (Tension H.D.A. 15 - 35 Deg)

Type DR (Tension H.D.A. 90 Deg)



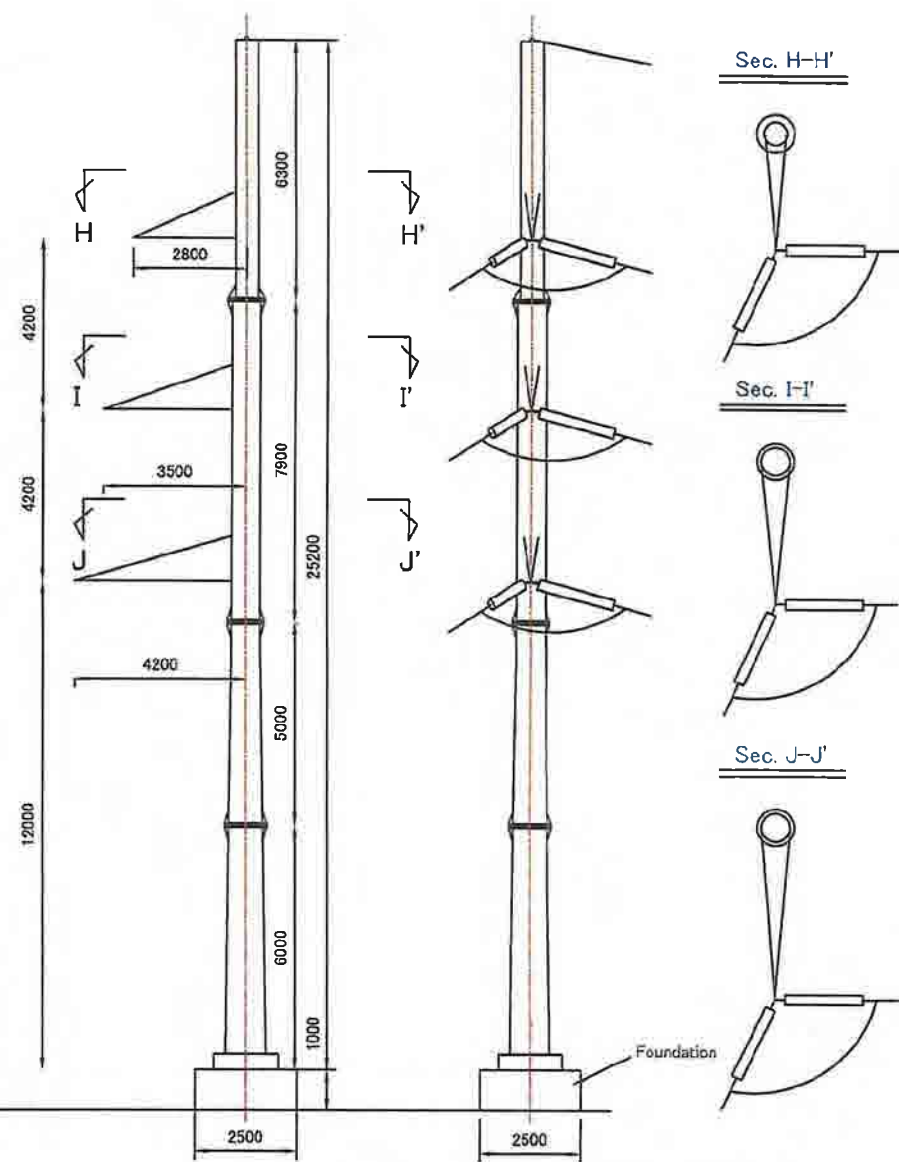
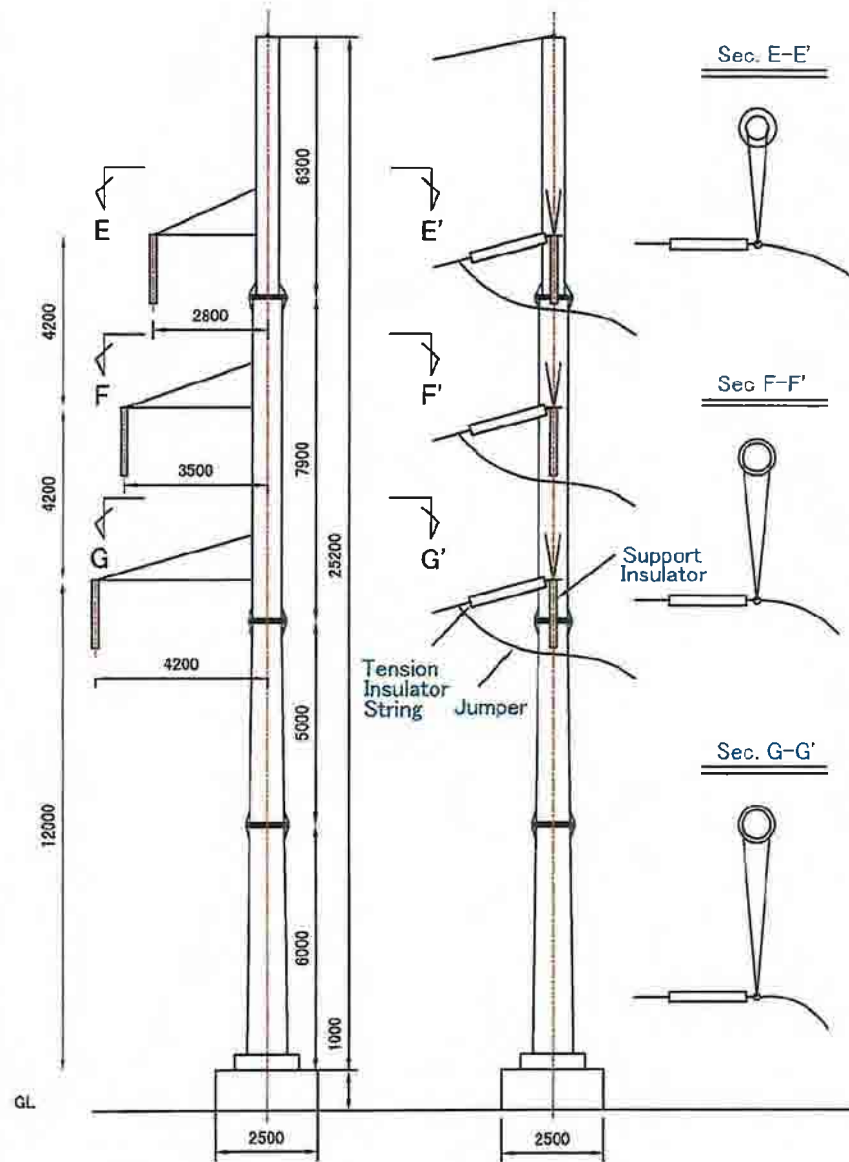
TL-G09B: 132kV Compact monopole (Type C Type DR)

01-8-V

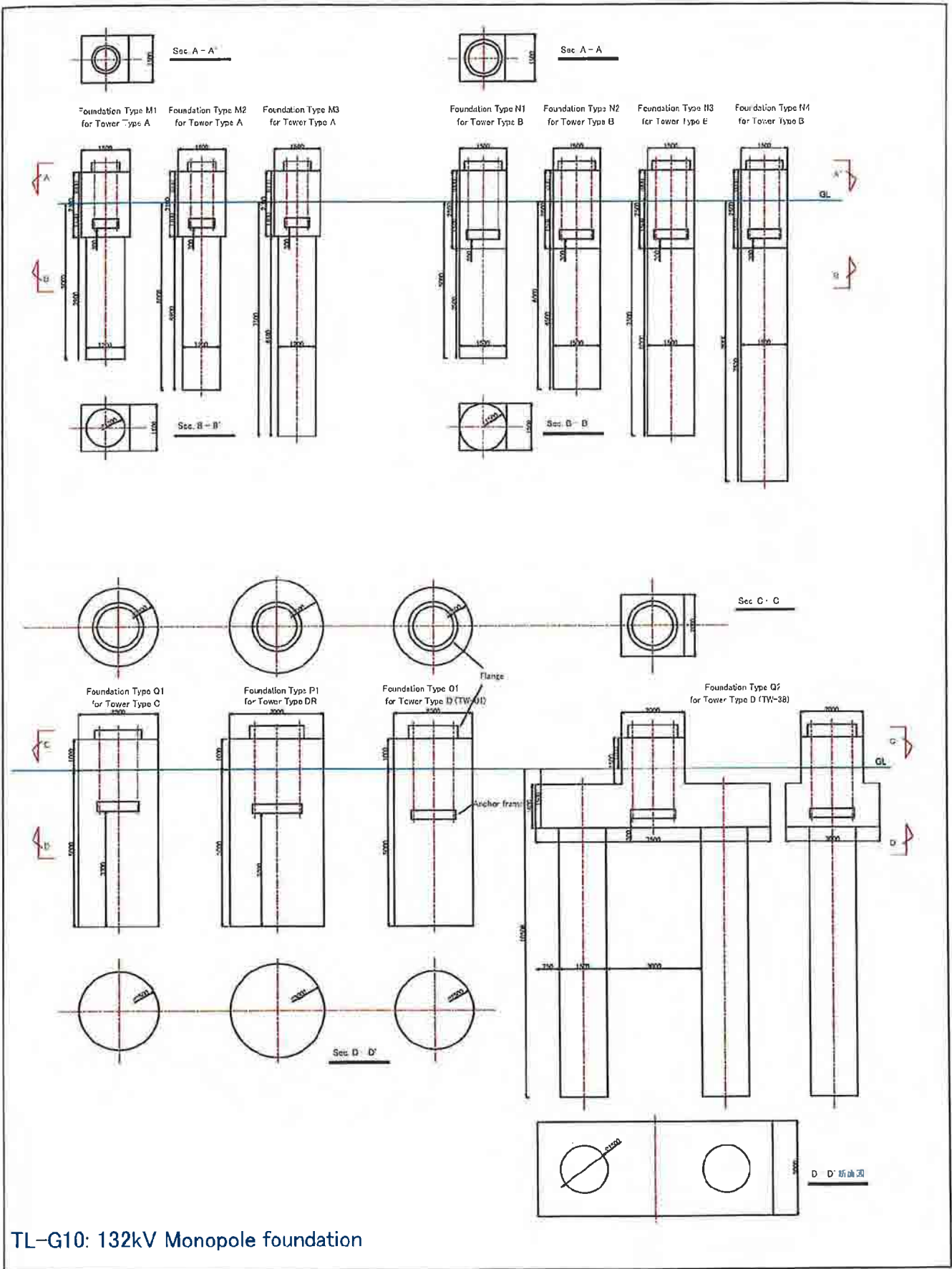
Material Monopole: Carbon steel, Cross arm: Rolled steel
Surface finishing Hot dip galvanized

Type D (Dead end type for TW-01)

Type D (Dead end type for TW-38)



TL-G09C: 132kV Compact monopole (Type D)



TL-G10: 132kV Monopole foundation