

Notice to Bidder

To comply with the ENGINEER ACT, B.E. 2542 FOR THE CONSTRUCTION WORK RELATED TO DESIGN OR CONSTRUCTION SUPERVISION WORK

The Contractors should be aware of the following:

1. The Contractor who is a juristic person is required to obtain a License to Practice the Controlled Engineering Profession issued by the Council of Engineers Thailand.
2. Where the Contractor is a joint venture or consortium, the Contractor shall comply with the following requirements: -
 - 1) In case of a joint venture, the joint venture is required to obtain a License to Practice the Controlled Engineering Profession issued by the Council of Engineers Thailand.
 - 2) In case of a consortium, only the member of the consortium who will be responsible for the Design or Construction Supervision Work is required to obtain a License to Practice the Controlled Engineering Profession issued by the Council of Engineers Thailand.

NOTE : If you have any questions, please contact COUNCIL OF ENGINEERS THAILAND.

Address : 1616/1 Ladprao, Wangthonglang, Bangkok, Thailand 10310

Telephone : 1303

Email : coe@saraban.mail.go.th

ประชาสัมพันธ์ผู้ประกอบการเพื่อทราบ

เพื่อให้การดำเนินงานสำหรับงานจ้างก่อสร้างที่มีลักษณะงานด้านการออกแบบหรือควบคุมงานก่อสร้าง สอดคล้องกับพระราชบัญญัติวิศวกร พ.ศ. 2542 จึงขอแจ้งแนวทางในการดำเนินงาน ดังนี้

1. ผู้รับจ้างที่เป็นนิติบุคคล ต้องเป็นผู้ที่ได้รับใบอนุญาตประกอบวิชาชีพวิศวกรรมควบคุมสำหรับนิติบุคคลจากสภาวิศวกร
2. ผู้รับจ้างที่ดำเนินการในรูปแบบของ “กิจการร่วมค้า”
 - (1) กรณีที่กิจการร่วมค้าได้จดทะเบียนเป็นนิติบุคคลใหม่ กิจการร่วมค่านั้นต้องเป็นผู้ที่ได้รับใบอนุญาตประกอบวิชาชีพวิศวกรรมควบคุมสำหรับนิติบุคคลจากสภาวิศวกร
 - (2) กรณีที่กิจการร่วมค้าไม่ได้จดทะเบียนเป็นนิติบุคคลใหม่ เฉพาะนิติบุคคลที่มีหน้าที่เป็นผู้รับผิดชอบงานวิศวกรรมออกแบบหรือควบคุม ต้องเป็นผู้ที่ได้รับใบอนุญาตประกอบวิชาชีพวิศวกรรมควบคุมสำหรับนิติบุคคลจากสภาวิศวกร

หมายเหตุ หากมีข้อสงสัย โปรดติดต่อ สภาวิศวกร

ที่อยู่ : 1616/1 ถนนลาดพร้าว แขวงวังทองหลาง เขตวังทองหลาง กรุงเทพมหานคร 10310

เบอร์ติดต่อ : 1303

อีเมล : coe@saraban.mail.go.th

EGAT's Privacy Notice on Procurement, Inventory Management and Contract Administration

Electricity Generating Authority of Thailand (EGAT) has performed the protection of the Personal Data regarding procurement, inventory management and contract administration to be in accordance with the **Personal Data Protection Act B.E. 2562** (the "2019 PDPA"), which comes into effect on June 1, 2022.

Details about EGAT's Privacy Notice on Procurement, Inventory Management and Contract Administration are available for you at https://www.egat.co.th/privacy-notice-procurement_en.html or the below QR Code.



The Redaction of Sensitive Personal Data

EGAT has announced the Privacy Notice on Procurement, Inventory Management and Contract Administration for the collection, use or disclosure of Personal Data, excluding the Sensitive Personal Data.

Should the documents you wish to submit to EGAT contain the Sensitive Personal Data as defined in Section 26 of the 2019 PDPA, pertaining to racial, ethnic origin, political opinions, cult, religious or philosophical beliefs, sexual behavior, criminal records, health data, disability, trade union information, genetic data, biometric data, or of any data which may affect you in the same manner, you shall redact or conceal such data before submitting to EGAT.

ประกาศความเป็นส่วนตัว (Privacy Notice) สำหรับการจัดซื้อจัดจ้าง การบริหารพัสดุ และการบริหารสัญญาของ กฟผ.

การไฟฟ้าฝ่ายผลิตแห่งประเทศไทย (กฟผ.) ได้ดำเนินการคุ้มครองข้อมูลส่วนบุคคลสำหรับการจัดซื้อจัดจ้าง การบริหารพัสดุ และการบริหารสัญญา เพื่อให้เป็นไปตามพระราชบัญญัติคุ้มครองข้อมูลส่วนบุคคลของประเทศไทย พ.ศ. 2562 (PDPA) ซึ่งมีผลบังคับใช้อย่างครบถ้วน ตั้งแต่วันที่ 1 มิถุนายน 2565 ทั้งนี้ ท่านสามารถศึกษารายละเอียดประกาศความเป็นส่วนตัว (Privacy Notice) สำหรับการจัดซื้อจัดจ้าง การบริหารพัสดุ และการบริหารสัญญา ได้ที่ <https://www.egat.co.th/privacy-notice-procurement.html> หรือที่ QR Code ด้านล่าง



การขิดฆ่าข้อมูลส่วนบุคคลอ่อนไหว

กฟผ. มีประกาศความเป็นส่วนตัว (Privacy Notice) สำหรับการจัดซื้อจัดจ้าง การบริหารพัสดุ และการบริหารสัญญา เพื่อใช้ในการเก็บรวบรวม ใช้ หรือเปิดเผย ข้อมูลส่วนบุคคล แต่ไม่เก็บข้อมูลส่วนบุคคลอ่อนไหว หากเอกสารของท่านที่ต้องส่งมอบให้ กฟผ. มีข้อมูลส่วนบุคคลอ่อนไหวตามที่ถูกบัญญัติไว้ในมาตรา 26 ของ PDPA ดังนี้ เชื้อชาติ เผ่าพันธุ์ ความคิดเห็นทางการเมือง ความเชื่อในลัทธิ ศาสนาหรือปรัชญา พฤติกรรมทางเพศ ประวัติอาชญากรรม ข้อมูลสุขภาพ ความพิการ ข้อมูลสหภาพแรงงาน ข้อมูลพันธุกรรม ข้อมูลชีวภาพ หรือข้อมูลอื่นใด ซึ่งกระทบต่อเจ้าของข้อมูลส่วนบุคคลในทำนองเดียวกันรวมอยู่ด้วย ขอให้ท่านขิดฆ่า หรือปกปิดข้อมูลดังกล่าว ก่อนส่งมอบให้แก่ กฟผ.

Notice to Bidder

Subject : Online Payment for Purchase of Bidding Documents

Please be informed of the online payment for purchase of bidding documents as follows:

- 1) Download the Registration Form and fill out all necessary information by typing. (Complete data is required.)
- 2) Payment shall be made by bank transfer or telegraphic transfer to EGAT's account no. 109-6-01958-2 (swift code : KRTHTHBK), Krung Thai Bank Public Company Limited, Bangkruai Branch, Nonthaburi.

All bank charges and fees incurred by the payment of bidding documents shall be under the buyer's responsibility.

- 3) Submit the fill-out Registration Form and the proof of payment from 1) to the email address of the in-charge officer and procurement.tse@egat.co.th in the CC. before 15.00 hrs. Bangkok Standard Time.
- 4) After the payment has been verified for approximately 3 working days, the in-charge officer will send the link for downloading the bidding documents together with the receipt to the purchaser's email address in the Registration Form.

Registration Form

Invitation to Bid No. TS12-S-24

Supply and Construction for Expansion of

115 kV Nong Bua Rawe (GIS) and 115 kV Sikhiu 2 Substations

Transmission System Expansion Project No. 12

Available Duration for Purchasing : March 10, 2023 – April 21, 2023

Price of Bidding Documents : USD 35.- or Baht 1,000.-

Instructions

- 1) Payment shall be made by bank transfer or telegraphic transfer to EGAT's account no. 109-6-01958-2 (swift code : KRTHTHBK), Krung Thai Bank Public Company Limited, Bangkruai Branch, Nonthaburi.
- 2) Fill out this Registration Form in English by typing. (Complete data is required.)
- 3) Submit the filled-out Registration Form and the proof of payment to the in-charge officer via email suparoek.int@egat.co.th and aradee.s@egat.co.th (with cc. procurement.tse@egat.co.th) before 15.00 hrs. Bangkok Standard Time.
- 4) The in-charge officer will send the link for downloading the bidding documents together with the receipt to the purchaser's email address in the Registration Form, which will take approximately 3 working days.

For Purchaser		TAX ID :
No.	Receipt No. :	Date :
Bidder's Name		
Address		
		Country :
Name of Contact Person :		Tel.
		Mobile No.
Email Address :		
Local Representative		
Address		
		TAX ID :
Name of Contact Person :		Tel.
		Mobile No.
Email Address :		
For Procurement Officer		Change of Bidder's Name
Bidder's Letter No. :		TAX ID :
		Dated :
New Bidder's Name		
Address		
		Country :
Name of Contact Person :		Tel.
		Mobile No.
Email Address :		
<u>Contact Information of In-charge Officer</u>		
Name	Mr. Suparoek Intawongpan / Ms. Aradee Srisomon	
Email address	suparoek.int@egat.co.th / aradee.s@egat.co.th	
Telephone No.	66 2436 0342	
Mobile No.	669 0280 1433	



Invitation to Bid No. TS12-S-24
Supply and Construction for Expansion of
115 kV Nong Bua Rawe (GIS) and 115 kV Sikhiu 2 Substations
Transmission System Expansion Project No. 12

The Electricity Generating Authority of Thailand (EGAT) is calling for the subject Invitation to Bid to be financed by EGAT's fund. The escalation factor (K) for price adjustment is applied to this Bid.

Place of Construction : Nong Bua Rawe Substation and Sikhiu 2 Substation

Medium Cost (including Value Added Tax and other expenses) : THB 40,200,000.-

Eligibility of Bidders

1. The Bidder shall be a juristic person who provides such services and shall not be named in the List of Work Abandoners published by the Permanent Secretary, Ministry of Finance, and/or in the Debarment List and/or in the List of Work Abandoners declared by EGAT.
2. The Bidder shall not be a Jointly Interested Bidder with other Bidders as from the date of EGAT's issuance of the Invitation, or shall not be a person who undertakes any action as an "Obstruction of Fair Price Competition" for this Invitation.
3. The Bidder shall not either be EGAT's consultant or involve in EGAT's consultancy company under this Invitation to Bid, or shall not have EGAT's personnel involved in his business as shareholder having voting right that can control his business, director, manager, officer, employee, agent, or consultant except those who are officially ordered by EGAT to act or participate therein.
4. The Bidder shall not be the person who is privileged or protected not to be taken any legal proceedings under Thai Court; Provided that such Bidder's government declares that such special privilege is waived.
5. The Bidder who is a joint venture or consortium shall carry out all the work under such formation from the time of bidding until the fulfillment of the Contract.

Availability of Bidding Documents

Bidding Documents will be available for online purchase during 8:00 hrs. to 15:00 hrs., Bangkok Standard Time, as from March 10, 2023 to April 21, 2023 at USD 35.- or THB 1,000.- per copy, non-refundable.

Please find more details for online purchasing process at <http://www4.egat.co.th/fprocurement/biddingeng/> or contact for further information at telephone no. 66 2436 0342 or procurement.tse@egat.co.th.

Delivery of Bids

Bids shall be submitted at Bidding Room, 1st Floor, Tor 082 Building during 09:30 hrs. to 10:00 hrs., Bangkok Standard Time, May 23, 2023 and will be opened publicly at 10:00 hrs.

ELECTRICITY GENERATING AUTHORITY OF THAILAND

March 10, 2023

Chattiya C.

(Miss Chattiya Chandhanayingyong)

Chief, International Procurement Department –
Transmission Segment



ประกาศการไฟฟ้าฝ่ายผลิตแห่งประเทศไทย เรื่อง ประกวดราคาจ้าง เลขที่ TS12-S-24

การไฟฟ้าฝ่ายผลิตแห่งประเทศไทย (กฟผ.) มีความประสงค์จะจัดซื้อและจ้างก่อสร้างขยายสถานีไฟฟ้าแรงสูง 115 KV ทนองบัวระเหว (GIS) และสถานีไฟฟ้าแรงสูง 115 KV สี่คี่ 2 สำหรับโครงการขยายระบบส่งไฟฟ้าระยะที่ 12 โดยทำสัญญาแบบปรับราคาได้ (ค่า k) โดยใช้ขงประมาณ กฟผ.

สถานที่ก่อสร้าง : สถานีไฟฟ้าแรงสูงทนองบัวระเหว และสถานีไฟฟ้าแรงสูงสี่คี่ 2

ราคากลาง (รวมภาษีมูลค่าเพิ่มและค่าใช้จ่ายอื่นๆ) : 40,200,000.- บาท

คุณสมบัติของผู้เสนอราคา

1. ต้องเป็นนิติบุคคลผู้มีอาชีพรับจ้างตามประกวดราคาจ้างดังกล่าว และต้องไม่เป็นผู้ทำงานซึ่งปลัดกระทรวงการคลังได้แจ้งเวียนชื่อไว้ หรือต้องไม่เป็นผู้ที่ กฟผ. ห้ามติดต่อหรือห้ามเข้าเสนอรราคา หรือต้องไม่เป็นผู้ที่ได้รับผลของการสั่งให้นิติบุคคลหรือบุคคลอื่นเป็นผู้ทำงานตามคำสั่ง กฟผ.
2. ต้องไม่เป็นผู้มีผลประโยชน์ร่วมกันกับผู้เสนอราคารายอื่น ณ วันประกาศประกวดราคาครั้งนี้เป็นต้นไป หรือต้องไม่เป็นผู้กระทำการอันเป็นการขัดขวางการแข่งขันราคาอย่างเป็นธรรมในการดำเนินการประกวดราคาครั้งนี้
3. ต้องไม่เป็นที่ปรึกษาของ กฟผ. หรือมีส่วนร่วมในบริษัทที่ปรึกษาของ กฟผ. ในงานนี้ หรือต้องไม่มีผู้ปฏิบัติงาน กฟผ. เข้าไปมีส่วนร่วมในกิจการของผู้เสนอราคา ไม่ว่าจะในฐานะผู้ถือหุ้นที่มีสิทธิควบคุมการจัดการ กรรมการ ผู้อำนวยการ ผู้จัดการ พนักงาน ลูกจ้าง ตัวแทน หรือที่ปรึกษา ยกเว้น ในกรณีที่ผู้ปฏิบัติงานได้รับคำสั่งอย่างเป็นทางการจาก กฟผ. ให้ไปปฏิบัติงานหรือเข้าร่วมในกิจการของผู้เสนอราคา
4. ต้องไม่เป็นผู้ได้รับเอกสิทธิ์หรือความคุ้มกัน ซึ่งอาจปฏิเสธไม่ยอมขึ้นศาลไทย เว้นแต่รัฐบาลของผู้เสนอราคาได้มีคำสั่งให้สละสิทธิ์และความคุ้มกันเช่นนั้น
5. ผู้ประสงค์เข้าประกวดราคาในนามของกิจการร่วมค้าหรือกิจการค้าร่วม (Joint Venture or Consortium) จะต้องดำเนินการทุกขั้นตอนของการประกวดราคา ในนามของกิจการร่วมค้าหรือกิจการค้าร่วม ตั้งแต่การเสนอรราคาจนสิ้นสุดข้อมูลพินกับ กฟผ.

การขายเอกสารประกวดราคา

ผู้สนใจติดต่อซื้อเอกสารประกวดราคา ในราคาชุดละ 1,000.- บาท ในวันทำการระหว่างเวลา 08:00 น. ถึง 15:00 น. ตั้งแต่วันที่ 10 มีนาคม 2566 ถึงวันที่ 21 เมษายน 2566 ทั้งนี้ สามารถดูรายละเอียดการซื้อเอกสารประกวดราคาได้ที่เว็บไซต์ <http://www4.egat.co.th/fprocurement/biddingeng/> หรือสอบถามข้อมูลเพิ่มเติมได้ทางโทรศัพท์ หมายเลข 0 2436 0342 หรืออีเมล procurement.tse@egat.co.th

การยื่นซองประกวดราคา

กำหนดยื่นซองประกวดราคา ในวันที่ 23 พฤษภาคม 2566 เวลา 09:30 น. ถึง 10:00 น. และเปิดซองประกวดราคาเวลา 10:00 น. ณ ห้องประกวดราคา ชั้น 1 อาคารฝ่ายจัดซื้อจัดจ้างและบริหารพัสดุ ท.082 การไฟฟ้าฝ่ายผลิตแห่งประเทศไทย เชียงสะพานพระราม 7 จังหวัดนนทบุรี

ประกาศ ณ วันที่ 10 มีนาคม 2566

(นางสาวฉัตรดิยา จันทนยิ่งยง)

หัวหน้ากองจัดซื้อจัดจ้างต่างประเทศสายงานระบบส่ง

ตารางแสดงวงเงินงบประมาณที่ได้รับจัดสรรและราคากลาง(ราคาอ้างอิง)
ในการจัดซื้อจัดจ้างที่มีใช้งานก่อสร้าง

1. ชื่อโครงการ Bid No. TS12-S-24

การจัดซื้อและจ้างก่อสร้างขยายสถานีไฟฟ้าแรงสูง 115 kV หนองบัวระเหว (GIS) และ
สถานีไฟฟ้าแรงสูง 115 kV สีคิ้ว 2

โครงการขยายระบบส่งไฟฟ้าระยะที่ 12

/หน่วยงานเจ้าของโครงการ ฝ่ายแผนงานและโครงการระบบส่ง การไฟฟ้าฝ่ายผลิตแห่งประเทศไทย

2. วงเงินงบประมาณที่ได้รับจัดสรร

โครงการขยายระบบส่งไฟฟ้าระยะที่ 12 งบประมาณ 60,000 ล้านบาท

3. วันที่กำหนดราคากลาง 20 กุมภาพันธ์ 2566 (วันที่ อวส. อนุมัติ)

ราคารวมภาษีมูลค่าเพิ่มและค่าใช้จ่ายอื่นๆ เป็นเงิน 40,200,000.00 บาท ราคา/หน่วย ตามเอกสารแนบ

4. แหล่งที่มาของราคากลาง

หลักเกณฑ์การกำหนดราคากลางการจัดซื้อและจัดจ้างงานก่อสร้างระบบส่งไฟฟ้าของสายงานระบบส่ง

5. รายชื่อเจ้าหน้าที่ผู้กำหนดราคากลาง

5.1 นายฉัตรชัย	เชาวนาธิคม	หมฟ-ส. กวอ-ส.
5.2 นายธิติวัดน์	เบญจวงค์รัตน์	หสก-ส. กวอ-ส.
5.3 นายภานุวัฒน์	ลิขิตผลผลดุง	หอด-ส. กวอ-ส.
5.4 นางสาวจารุวรรณ	พิพัฒน์มงคลพร	หวอ-ส. กวอ-ส.
5.5 นายรุหาญ	รุจิธิฐธาร	กวป-ส.
5.6 นายสุวัฒน์	ศักดิ์สมกุลอุทัย	กวธ-ส.

หมายเหตุ ค่าใช้จ่ายอื่นๆ ได้แก่ ค่าใช้จ่ายที่ กพผ. ต้องจ่ายตามวิธีการพิจารณาเปรียบเทียบราคาที่กำหนดไว้
ในเอกสารประกวดราคา เช่น อากรขาเข้า เป็นต้น




นางสาวอัสยา ช่างวิทยาการ

หจตส-ท.

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MEDIUM COST FOR BID NO. TS12-S-24
SUMMARY OF BID PRICE
SUPPLY AND CONSTRUCTION FOR EXPANSION OF 115 KV NONG BUA RAWE (GIS) AND 115 KV SIKHIU 2 SUBSTATIONS
TRANSMISSION SYSTEM EXPANSION PROJECT NO.12

Schedule	Description	Currency	Supply of Equipment		Local Currency (excluding VAT) Baht Amount	Local Transportation (excluding VAT) Baht Amount	Local Transportation, Construction and Installation (excluding VAT) Baht Amount
			Foreign Supply	Local Supply			
			CIF Thai Port	Ex-works Price (excluding VAT) Baht			
			Amount	Amount			
1	115 KV NONG BUA RAWE SUBSTATION (GIS)	THB	1,496,299.29				
				6,670,015.07	447,579.80	68,330.00	3,632,950.33
2	115 KV SIKHIU 2 SUBSTATION	THB	5,982,159.62				
				12,835,797.41	2,772,655.00	32,573.00	3,472,403.69
BID PRICE		THB	7,478,458.91	Baht	Baht	Baht	Baht
				19,505,812.48	3,220,234.80	100,903.00	7,105,354.02
OTHER EXPENSES		THB	149,569.18				
VAT		THB	533,961.97	Baht	Baht	Baht	Baht
				1,365,406.87	225,416.44	7,063.21	497,374.78
SUMMARY OF BID PRICE		THB	8,161,990.06	Baht	Baht	Baht	Baht
				20,871,219.35	3,445,651.24	107,966.21	7,602,728.80
TOTAL MEDIUM COST		THB	40,189,555.66				
TOTAL MEDIUM COST (ROUND)		THB	40,200,000.00				


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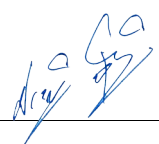
MEDIUM COST FOR BID NO. TS12-S-24
SCHEDULE 1 : 115 KV NONG BUA RAWE SUBSTATION (GIS)
SUPPLY AND CONSTRUCTION FOR EXPANSION OF 115 KV NONG BUA RAWE SUBSTATION (GIS)
TRANSMISSION SYSTEM EXPANSION PROJECT NO.12

Description	Currency	Supply of Equipment		Local Currency (excluding VAT) Baht	Local Transportation (excluding VAT) Baht	Local Transportation, Construction and Installation (excluding VAT) Baht
		Foreign Supply	Local Supply			
		CIF Thai Port	Ex-works Price (excluding VAT) Baht			
		Amount	Amount			
PART 1AB : SUPPLY AND INSTALLATION OF SUBSTATION EQUIPMENT	THB	1,496,299.29	5,303,439.07			3,632,950.33
PART 1C : CIVIL WORK				447,579.80		
PART 1D : SUPPLY OF SPARE PARTS			1,366,576.00		68,330.00	
TOTAL PRICE	THB	1,496,299.29	Baht	Baht	Baht	Baht
			6,670,015.07	447,579.80	68,330.00	3,632,950.33


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MEDIUM COST FOR BID NO. TS12-S-24
PART 1AB : SUPPLY AND INSTALLATION OF SUBSTATION EQUIPMENT
SUPPLY AND CONSTRUCTION FOR EXPANSION OF 115 KV NONG BUA RAWE SUBSTATION (GIS)
TRANSMISSION SYSTEM EXPANSION PROJECT NO.12

Description	Currency	Supply of Equipment		Local Transportation, Construction and Installation (excluding VAT) Baht
		Foreign Supply	Local Supply	
		CIF Thai Port	Ex-works Price (excluding VAT) Baht	
		Amount	Amount	
Schedule 1AB4 : Surge Arrester	THB	231,000.00	72,000.00	33,330.00
Schedule 1AB5 : Current Transformer and Junction Box	THB	402,000.00	167,000.00	62,590.00
Schedule 1AB6 : Coupling Capacitor Voltage Transformer, Coupling Capacitor, Voltage Transformer and Junction Box	THB	465,000.00	177,000.00	70,620.00
Schedule 1AB7 : SF6 Gas Insulated Switchgear				2,103,916.98


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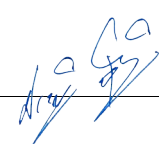
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MEDIUM COST FOR BID NO. TS12-S-24
PART 1AB : SUPPLY AND INSTALLATION OF SUBSTATION EQUIPMENT
SUPPLY AND CONSTRUCTION FOR EXPANSION OF 115 KV NONG BUA RAWE SUBSTATION (GIS)
TRANSMISSION SYSTEM EXPANSION PROJECT NO.12

Description	Currency	Supply of Equipment		Local Transportation, Construction and Installation (excluding VAT) Baht
		Foreign Supply	Local Supply	
		CIF Thai Port	Ex-works Price (excluding VAT) Baht	
		Amount	Amount	
Schedule 1AB10 : Disconnecting Switch	THB	243,871.00	82,717.00	35,924.68
Schedule 1AB12 : AC&DC Distribution Board and Termination Box			3,236.00	355.96
Schedule 1AB14 : Substation Steel Structure			272,504.35	74,938.70
Schedule 1AB18 : Low Voltage Cable and Conductor			878,448.12	201,311.03



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MEDIUM COST FOR BID NO. TS12-S-24
PART 1AB : SUPPLY AND INSTALLATION OF SUBSTATION EQUIPMENT
SUPPLY AND CONSTRUCTION FOR EXPANSION OF 115 KV NONG BUA RAWE SUBSTATION (GIS)
TRANSMISSION SYSTEM EXPANSION PROJECT NO.12

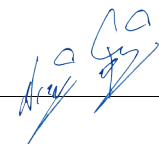
Description	Currency	Supply of Equipment		Local Transportation, Construction and Installation (excluding VAT) Baht
		Foreign Supply	Local Supply	
		CIF Thai Port	Ex-works Price (excluding VAT) Baht	
		Amount	Amount	
Schedule 1AB19 : Switchyard Lighting Fixtures			13,505.80	3,714.10
Schedule 1AB20 : Aluminum Tube, Connector and Miscellaneous Hardware			20,475.84	4,692.38
Schedule 1AB21 : Bus Fitting	THB	115,592.11		26,489.86
Schedule 1AB22 : Grounding Material	THB	20,319.22	91,249.40	25,567.81

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MEDIUM COST FOR BID NO. TS12-S-24
PART 1AB : SUPPLY AND INSTALLATION OF SUBSTATION EQUIPMENT
SUPPLY AND CONSTRUCTION FOR EXPANSION OF 115 KV NONG BUA RAWE SUBSTATION (GIS)
TRANSMISSION SYSTEM EXPANSION PROJECT NO.12

Description	Currency	Supply of Equipment		Local Transportation, Construction and Installation (excluding VAT) Baht
		Foreign Supply	Local Supply	
		CIF Thai Port	Ex-works Price (excluding VAT) Baht	
		Amount	Amount	
Schedule 1AB23 : Substation Miscellaneous	THB	18,516.96	69,937.56	20,270.83
Schedule 1AB24 : Control and Protection System			3,455,365.00	422,088.00
Schedule 1AB25 : Fault Recording System				5,742.00
Schedule 1AB38 : Remote Terminal Unit				13,398.00



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MEDIUM COST FOR BID NO. TS12-S-24
PART 1AB : SUPPLY AND INSTALLATION OF SUBSTATION EQUIPMENT
SUPPLY AND CONSTRUCTION FOR EXPANSION OF 115 KV NONG BUA RAWE SUBSTATION (GIS)
TRANSMISSION SYSTEM EXPANSION PROJECT NO.12

Description	Currency	Supply of Equipment		Local Transportation, Construction and Installation (excluding VAT) Baht
		Foreign Supply	Local Supply	
		CIF Thai Port	Ex-works Price (excluding VAT) Baht	
		Amount	Amount	
Schedule 1AB39 : Commissioning				528,000.00
PART 1AB	THB	1,496,299.29	Baht	Baht
			5,303,439.07	3,632,950.33



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MEDIUM COST FOR BID NO. TS12-S-24
PART 1C : CIVIL WORK
SUPPLY AND CONSTRUCTION FOR EXPANSION OF 115 KV NONG BUA RAWE SUBSTATION (GIS)
TRANSMISSION SYSTEM EXPANSION PROJECT NO.12

Description	Local Currency (excluding VAT) Baht
	Amount
Schedule 1C1 : Foundation Work	346,457.00
Schedule 1C2 : Cable Trench	101,122.80
PART 1C	Baht 447,579.80



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**MEDIUM COST FOR BID NO. TS12-S-24
PART 1D : SUPPLY OF SPARE PARTS
SUPPLY AND CONSTRUCTION FOR EXPANSION OF 115 KV NONG BUA RAWE SUBSTATION (GIS)
TRANSMISSION SYSTEM EXPANSION PROJECT NO.12**

Description	Currency	Supply of Equipment		Local Transportation (excluding VAT) Baht Amount
		Foreign Supply	Local Supply	
		CIF Thai Port	Ex-works Price (excluding VAT) Baht	
		Amount	Amount	
Schedule 1D24 : Spare Parts for Control and Protection System			1,366,576.00	68,330.00
PART 1D			Baht 1,366,576.00	Baht 68,330.00

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MEDIUM COST FOR BID NO. TS12-S-24
SCHEDULE 2 : 115 KV SIKHIU 2 SUBSTATION
SUPPLY AND CONSTRUCTION FOR EXPANSION OF 115 KV SIKHIU 2 SUBSTATION
TRANSMISSION SYSTEM EXPANSION PROJECT NO.12

Description	Currency	Supply of Equipment		Local Currency (excluding VAT) Baht	Local Transportation (excluding VAT) Baht	Local Transportation, Construction and Installation (excluding VAT) Baht
		Foreign Supply	Local Supply			
		CIF Thai Port	Ex-works Price (excluding VAT) Baht			
		Amount	Amount			
PART 2AB : SUPPLY AND INSTALLATION OF SUBSTATION EQUIPMENT	THB	5,982,159.62	12,184,341.41			3,472,403.69
PART 2C : CIVIL WORK				2,772,655.00		
PART 2D : SUPPLY OF SPARE PARTS			651,456.00		32,573.00	
TOTAL PRICE	THB	5,982,159.62	Baht 12,835,797.41	Baht 2,772,655.00	Baht 32,573.00	Baht 3,472,403.69

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MEDIUM COST FOR BID NO. TS12-S-24
PART 2AB : SUPPLY AND INSTALLATION OF SUBSTATION EQUIPMENT
SUPPLY AND CONSTRUCTION FOR EXPANSION OF 115 KV SIKHIU 2 SUBSTATION
TRANSMISSION SYSTEM EXPANSION PROJECT NO.12

Description	Currency	Supply of Equipment		Local Transportation, Construction and Installation (excluding VAT) Baht
		Foreign Supply	Local Supply	
		CIF Thai Port	Ex-works Price (excluding VAT) Baht	
		Amount	Amount	
Schedule 2AB5 : Current Transformer and Junction Box	THB	1,542,000.00	551,000.00	230,230.00
Schedule 2AB6 : Coupling Capacitor Voltage Transformer, Coupling Capacitor, Voltage Transformer and Junction Box	THB	465,000.00	177,000.00	70,620.00
Schedule 2AB9 : Power Circuit Breaker	THB	1,521,936.00		167,412.96
Schedule 2AB10 : Disconnecting Switch	THB	1,827,672.00	579,019.00	264,736.01

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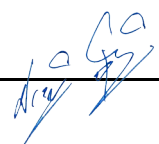
MEDIUM COST FOR BID NO. TS12-S-24
PART 2AB : SUPPLY AND INSTALLATION OF SUBSTATION EQUIPMENT
SUPPLY AND CONSTRUCTION FOR EXPANSION OF 115 KV SIKHIU 2 SUBSTATION
TRANSMISSION SYSTEM EXPANSION PROJECT NO.12

Description	Currency	Supply of Equipment		Local Transportation, Construction and Installation (excluding VAT) Baht
		Foreign Supply	Local Supply	
		CIF Thai Port	Ex-works Price (excluding VAT) Baht	
		Amount	Amount	
Schedule 2AB12 : AC&DC Distribution Board and Termination Box			12,944.00	1,423.84
Schedule 2AB14 : Substation Steel Structure			1,612,526.51	443,444.79
Schedule 2AB15 : Insulator				53,754.86
Schedule 2AB18 : Low Voltage Cable and Conductor			2,654,838.12	608,400.40

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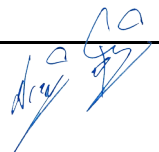
MEDIUM COST FOR BID NO. TS12-S-24
PART 2AB : SUPPLY AND INSTALLATION OF SUBSTATION EQUIPMENT
SUPPLY AND CONSTRUCTION FOR EXPANSION OF 115 KV SIKHIU 2 SUBSTATION
TRANSMISSION SYSTEM EXPANSION PROJECT NO.12

Description	Currency	Supply of Equipment		Local Transportation, Construction and Installation (excluding VAT) Baht
		Foreign Supply	Local Supply	
		CIF Thai Port	Ex-works Price (excluding VAT) Baht	
		Amount	Amount	
Schedule 2AB19 : Switchyard Lighting Fixtures			54,023.20	14,856.38
Schedule 2AB20 : Aluminum Tube, Connector and Miscellaneous Hardware			567,378.22	130,024.18
Schedule 2AB21 : Bus Fitting	THB	441,372.74		101,147.92
Schedule 2AB22 : Grounding Material	THB	114,240.00	238,207.60	80,769.24


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MEDIUM COST FOR BID NO. TS12-S-24
PART 2AB : SUPPLY AND INSTALLATION OF SUBSTATION EQUIPMENT
SUPPLY AND CONSTRUCTION FOR EXPANSION OF 115 KV SIKHIU 2 SUBSTATION
TRANSMISSION SYSTEM EXPANSION PROJECT NO.12

Description	Currency	Supply of Equipment		Local Transportation, Construction and Installation (excluding VAT) Baht
		Foreign Supply	Local Supply	
		CIF Thai Port	Ex-works Price (excluding VAT) Baht	
		Amount	Amount	
Schedule 2AB23 : Substation Miscellaneous	THB	69,938.88	227,591.76	68,184.11
Schedule 2AB24 : Control and Protection System			3,894,558.00	534,476.00
Schedule 2AB25 : Fault Recording System			1,615,255.00	161,525.00
Schedule 2AB38 : Remote Terminal Unit				13,398.00


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MEDIUM COST FOR BID NO. TS12-S-24
PART 2AB : SUPPLY AND INSTALLATION OF SUBSTATION EQUIPMENT
SUPPLY AND CONSTRUCTION FOR EXPANSION OF 115 KV SIKHIU 2 SUBSTATION
TRANSMISSION SYSTEM EXPANSION PROJECT NO.12

Description	Currency	Supply of Equipment		Local Transportation, Construction and Installation (excluding VAT) Baht
		Foreign Supply	Local Supply	
		CIF Thai Port	Ex-works Price (excluding VAT) Baht	
		Amount	Amount	
Schedule 2AB39 : Commissioning				528,000.00
PART 2AB	THB	5,982,159.62	Baht	3,472,403.69
			12,184,341.41	



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นางสาวอสยา ช่างวิทยาการ

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MEDIUM COST FOR BID NO. TS12-S-24
PART 2C : CIVIL WORK
SUPPLY AND CONSTRUCTION FOR EXPANSION OF 115 KV SIKHIU 2 SUBSTATION
TRANSMISSION SYSTEM EXPANSION PROJECT NO.12

Description	Local Currency (excluding VAT) Baht
	Amount
Schedule 2C1 : Foundation Work	1,899,760.00
Schedule 2C2 : Cable Trench	872,895.00
PART 2C	Baht 2,772,655.00

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MEDIUM COST FOR BID NO. TS12-S-24
PART 2D : SUPPLY OF SPARE PARTS
SUPPLY AND CONSTRUCTION FOR EXPANSION OF 115 KV SIKHIU 2 SUBSTATION
TRANSMISSION SYSTEM EXPANSION PROJECT NO.12

Description	Currency	Supply of Equipment		Local Transportation (excluding VAT) Baht Amount
		Foreign Supply	Local Supply	
		CIF Thai Port	Ex-works Price (excluding VAT) Baht	
		Amount	Amount	
Schedule 2D25 : Spare Parts for Fault Recording System			651,456.00	32,573.00
PART 2D			Baht 651,456.00	Baht 32,573.00



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MEDIUM COST FOR BID NO. TS12-S-24

1AB4 : Surge Arrester

SUPPLY AND CONSTRUCTION FOR EXPANSION OF 115 KV NONG BUA RAWE SUBSTATION (GIS)

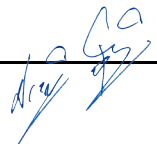
TRANSMISSION SYSTEM EXPANSION PROJECT NO.12

Item No.	Description	Qty.	Unit	Currency	Supply of Equipment				Local Transportation, Construction and (excluding VAT) Baht			
					Foreign Supply		Local Supply					
					CIF Thai Port		Ex-works Price (excluding VAT) Baht		Unit Price	Amount	Unit Price	Amount
					Unit Price	Amount	Unit Price	Amount				
1AB4-1	108 kV Surge Arrester as per Ratings and Features RF SA7Y11	3		THB	77,000.00	231,000.00			XXXXX	XXXXX		
1AB4-2	Steel Supporting Structure for SA7Y11(for Item No. 1AB4-1), H=4.50 m as per Dwg. No. ST-LA-7-01 and SD-AB-0-01	3					24,000.00	72,000.00	XXXXX	XXXXX		
1AB4-3	Cost of Local Transportation, Construction and Installation for Item No. 1AB4-1 thru 1AB4-2				XXXXXX	XXXXXX	XXXXXX	XXXXXX	33,330.00	33,330.00		
				THB	231,000.00		Baht		Baht			
Total Price for Schedule 1AB4							72,000.00		33,330.00			

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MEDIUM COST FOR BID NO. TS12-S-24
1AB5 : Current Transformer and Junction Box
SUPPLY AND CONSTRUCTION FOR EXPANSION OF 115 KV NONG BUA RAWE SUBSTATION (GIS)
TRANSMISSION SYSTEM EXPANSION PROJECT NO.12

Item No.	Description	Qty.	Unit	Currency	Supply of Equipment				Local Transportation, Construction and (excluding VAT) Baht			
					Foreign Supply		Local Supply		Unit Price	Amount	Unit Price	Amount
					CIF Thai Port		Ex-works Price (excluding VAT) Baht					
					Unit Price	Amount	Unit Price	Amount	Unit Price	Amount		
1AB5-1	115 kV CT, 550 kV BIL, 600x1200:5//5A, 40 kA, oil filled as per Rating and Features RF CT75ED	3		THB	134,000.00	402,000.00			XXXXX	XXXXX		
1AB5-2	Steel Supporting Structure for CT75ED (for Item No. 1AB5-1), H=4.50 m as per Dwg. No. ST-CT-4-01 and SD-AB-0-01	3					52,000.00	156,000.00	XXXXX	XXXXX		
1AB5-3	Junction Box type CT3 (for Item No. 1AB5-1) as per Dwg. No. TP-E-18.2 and TP-E-18.4	1					11,000.00	11,000.00	XXXXX	XXXXX		
1AB5-4	Cost of Local Transportation, Construction and Installation for Item No. 1AB5-1 thru 1AB5-3	Lump sum	Lump sum		XXXXX	XXXXX	XXXXX	XXXXX	62,590.00	62,590.00		
				THB	402,000.00		Baht		Baht			
Total Price for Schedule 1AB5							167,000.00		62,590.00			


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MEDIUM COST FOR BID NO. TS12-S-24

**1AB6 : Coupling Capacitor Voltage Transformer, Coupling Capacitor, Voltage Transformer and Junction Box
SUPPLY AND CONSTRUCTION FOR EXPANSION OF 115 KV NONG BUA RAWE SUBSTATION (GIS)
TRANSMISSION SYSTEM EXPANSION PROJECT NO.12**

Item No.	Description	Qty.	Unit	Currency	Supply of Equipment				Local Transportation, Construction and (excluding VAT) Baht			
					Foreign Supply		Local Supply		Unit Price	Amount	Unit Price	Amount
					CIF Thai Port		Ex-works Price (excluding VAT) Baht					
					Unit Price	Amount	Unit Price	Amount	Unit Price	Amount		
1AB6-1	115 kV voltage transformer, 550 kV BIL, 115000/√3 : 115.47/57.74 & 115.47/57.74 & 110 V oil filled as per ratings and features RF VT7011	3		THB	155,000.00	465,000.00			XXXXXX	XXXXXX		
1AB6-2	Steel Supporting Structure for VT7011 (for Item No. 1AB6-1), H= 4.50 m. as per EGAT's Dwg. No. ST-VT-4-01 and SD-AB-0-01	3					43,000.00	129,000.00	XXXXXX	XXXXXX		
1AB6-3	Junction Box type PT14 (for Item No. 1AB6-1) as per Dwg. No. TP-E-18.1-3/4, 4/4 and TP-E-18.4	1					48,000.00	48,000.00	XXXXXX	XXXXXX		
1AB6-4	Cost of Local Transportation, Construction and Installation for Item No. 1AB6-1 thru 1AB6-3		Lump sum		XXXXXX	XXXXXX	XXXXXX	XXXXXX	70,620.00	70,620.00		
				THB	465,000.00		Baht		Baht			
Total Price for Schedule 1AB6							177,000.00		70,620.00			

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MEDIUM COST FOR BID NO. TS12-S-24

1AB7 : SF6 Gas Insulated Switchgear

SUPPLY AND CONSTRUCTION FOR EXPANSION OF 115 KV NONG BUA RAWE SUBSTATION (GIS)

TRANSMISSION SYSTEM EXPANSION PROJECT NO.12

Item No.	Description	Qty.	Unit	Currency	Supply of Equipment				Local Transportation, Construction and (excluding VAT) Baht			
					Foreign Supply		Local Supply		Ex-works Price (excluding VAT) Baht		Baht	
					CIF Thai Port							
					Unit Price	Amount	Unit Price	Amount	Unit Price	Amount		
1AB7-1	123 kV 3150 A 40 kA Gas Insulated Switchgear as per Ratings and Features RF IS7542(IEC) and Drawing No. NBR-S-1-03/04, NBR-S-1-04/04, NBR-S-2-01/01, NBR-S-3-01/01 and NBR-S-4-01/01 (115kV Line No.1 to PEA)	1	bay		supplied by EGAT	supplied by EGAT	supplied by EGAT	supplied by EGAT	XXXXXX	XXXXXX		
1AB7-2	123 kV 3150 A 40 kA Gas Insulated Switchgear as per Ratings and Features RF IS7542(IEC) and Drawing No. NBR-S-1-03/04, NBR-S-1-04/04, NBR-S-2-01/01, NBR-S-3-01/01 and NBR-S-4-01/01 (Metal Enclosed Bus)	1	lot		supplied by EGAT	supplied by EGAT	supplied by EGAT	supplied by EGAT	XXXXXX	XXXXXX		
1AB7-3	123 kV 3150 A 40 kA Gas Insulated Switchgear as per Ratings and Features RF IS7542(IEC) outdoor type (GIB) as per Drawing No. NBR-S-1-03/04, NBR-S-1-04/04, NBR-S-2-01/01, NBR-S-3-01/01 and NBR-S-4-01/01	1	lot		supplied by EGAT	supplied by EGAT	supplied by EGAT	supplied by EGAT	XXXXXX	XXXXXX		
1AB7-4	Local control cubicle for IS7542 for item 1AB7-1 thru 1AB7-3 (including interlocks requirement with existing bays and existing LCC Modification (if any))*	1	set		supplied by EGAT	supplied by EGAT	supplied by EGAT	supplied by EGAT	XXXXXX	XXXXXX		
1AB7-5	Steel Supporting Structure for IS7542*	1	lot		supplied by EGAT	supplied by EGAT	supplied by EGAT	supplied by EGAT	XXXXXX	XXXXXX		

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MEDIUM COST FOR BID NO. TS12-S-24

1AB7 : SF6 Gas Insulated Switchgear

SUPPLY AND CONSTRUCTION FOR EXPANSION OF 115 KV NONG BUA RAWE SUBSTATION (GIS)

TRANSMISSION SYSTEM EXPANSION PROJECT NO.12

Item No.	Description	Qty.	Unit	Currency	Supply of Equipment				Local Transportation, Construction and (excluding VAT) Baht			
					Foreign Supply		Local Supply		Ex-works Price (excluding VAT) Baht			
					CIF Thai Port							
					Unit Price	Amount	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount
1AB7-6	Removable service platform and removable ladder for GIS inspection (include existing GIS)	1	lot		supplied by EGAT	supplied by EGAT	supplied by EGAT	supplied by EGAT	XXXXX	XXXXX		
1AB7-7	Accessories and special tools necessary	1	lot		supplied by EGAT	supplied by EGAT	supplied by EGAT	supplied by EGAT	XXXXX	XXXXX		
1AB7-8	Cost of Local Transportation, Construction and Installation for Item No. 1AB7-1 thru 1AB7-7	Lump sum	Lump sum		XXXXX	XXXXX	XXXXX	XXXXX	2,103,916.98	2,103,916.98		
Total Price for Schedule 1AB7									Baht	Baht 2,103,916.98		

* The design of supporting structures and LCCs for Gas Insulated Switchgear shall be verified by Gas Insulated Switchgear manufacturer.

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MEDIUM COST FOR BID NO. TS12-S-24

1AB10 : Disconnecting Switch

SUPPLY AND CONSTRUCTION FOR EXPANSION OF 115 KV NONG BUA RAWE SUBSTATION (GIS)

TRANSMISSION SYSTEM EXPANSION PROJECT NO.12

Item No.	Description	Qty.	Unit	Currency	Supply of Equipment				Local Transportation, Construction and (excluding VAT) Baht			
					Foreign Supply		Local Supply		Unit Price	Amount	Unit Price	Amount
					CIF Thai Port		Ex-works Price (excluding VAT) Baht					
					Unit Price	Amount	Unit Price	Amount	Unit Price	Amount		
1AB10-1	123 kV 2000 A air switch (high creepage) manually gang operated as per Ratings and Features RF DS77BH(IEC) (phase spacing = 2.25 m)	1		THB	243,871.00	243,871.00			XXXXXX	XXXXXX		
1AB10-2	Steel Supporting Structure for DS77BH (IEC) as per EGAT's Dwg. No. ST-DS-4-01 and SD-AB-0-01, H = 5.30 m	1					82,717.00	82,717.00	XXXXXX	XXXXXX		
1AB10-3	Cost of Local Transportation, Construction and Installation for Item No. 1AB10-1 thru 1AB10-2	Lump sum	Lump sum		XXXXXX	XXXXXX	XXXXXX	XXXXXX	35,924.68	35,924.68		
				THB	243,871.00		Baht		Baht			
Total Price for Schedule 1AB10							82,717.00		35,924.68			

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MEDIUM COST FOR BID NO. TS12-S-24
1AB12 : AC&DC Distribution Board and Termination Box
SUPPLY AND CONSTRUCTION FOR EXPANSION OF 115 KV NONG BUA RAWE SUBSTATION (GIS)
TRANSMISSION SYSTEM EXPANSION PROJECT NO.12

Item No.	Description	Qty.	Unit	Currency	Supply of Equipment				Local Transportation, Construction and (excluding VAT) Baht			
					Foreign Supply		Local Supply		Unit Price	Amount	Unit Price	Amount
					CIF Thai Port		Ex-works Price (excluding VAT) Baht					
					Unit Price	Amount	Unit Price	Amount	Unit Price	Amount		
1AB12-1	Termination Box type TB1 as per Dwg No. LT-TB-0-01	1					3,236.00	3,236.00	XXXXX	XXXXX		
1AB12-2	Cost of Local Transportation, Construction and Installation for Item No. 1AB12-1	Lump sum	Lump sum		XXXXX	XXXXX	XXXXX	XXXXX	355.96	355.96		
Total Price for Schedule 1AB12							Baht 3,236.00		Baht 355.96			

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MEDIUM COST FOR BID NO. TS12-S-24

1AB14 : Substation Steel Structure

SUPPLY AND CONSTRUCTION FOR EXPANSION OF 115 KV NONG BUA RAWE SUBSTATION (GIS)

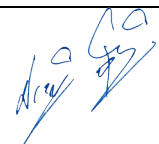
TRANSMISSION SYSTEM EXPANSION PROJECT NO.12

Item No.	Description	Qty.	Unit	Currency	Supply of Equipment				Local Transportation, Construction and (excluding VAT) Baht			
					Foreign Supply		Local Supply		Unit Price	Amount	Unit Price	Amount
					CIF Thai Port		Ex-works Price (excluding VAT) Baht					
					Unit Price	Amount	Unit Price	Amount	Unit Price	Amount		
1AB14-1	115 kV take-off structure (TS702) as per Dwg. No. ST-TS-7-02	1					192,856.94	192,856.94	XXXXX	XXXXX		
1AB14-2	115 kV beam (BB703) as per Dwg. No. ST-BB-7-03	1					67,124.23	67,124.23	XXXXX	XXXXX		
1AB14-3	Disconnecting switch operating platform (OP002) as per Dwg. No. ST-OP-0-02	1					12,523.18	12,523.18	XXXXX	XXXXX		
1AB14-4	Cost of Local Transportation, Construction and Installation for Item No. 1AB14-1 thru 1AB14-3	Lump sum	Lump sum		XXXXX	XXXXX	XXXXX	XXXXX	74,938.70	74,938.70		
Total Price for Schedule 1AB14									Baht	272,504.35	Baht	74,938.70

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MEDIUM COST FOR BID NO. TS12-S-24
1AB18 : Low Voltage Cable and Conductor
SUPPLY AND CONSTRUCTION FOR EXPANSION OF 115 KV NONG BUA RAWE SUBSTATION (GIS)
TRANSMISSION SYSTEM EXPANSION PROJECT NO.12

Item No.	Description	Qty.	Unit	Currency	Supply of Equipment				Local Transportation, Construction and (excluding VAT) Baht			
					Foreign Supply		Local Supply		Ex-works Price (excluding VAT) Baht			
					CIF Thai Port							
					Unit Price	Amount	Unit Price	Amount	Unit Price	Amount		
1AB18-1	750 V power cable as per Specification attached	Lump sum	Lump sum				65,073.36	65,073.36	XXXXX	XXXXX		
1AB18-2	600 V control cable with PVC insulation as per Specification attached	Lump sum	Lump sum				619,691.16	619,691.16	XXXXX	XXXXX		
1AB18-3	750 V lighting cable(THW) as per Specification attached	Lump sum	Lump sum				633.60	633.60	XXXXX	XXXXX		
1AB18-4	750 V lighting cable(NYY) as per Specification attached	Lump sum	Lump sum				3,920.40	3,920.40	XXXXX	XXXXX		
1AB18-5	Annealed copper ground wire as per Specification attached	Lump sum	Lump sum				165,369.60	165,369.60	XXXXX	XXXXX		
1AB18-6	Aluminum conductor as per Specification attached	Lump sum	Lump sum				23,760.00	23,760.00	XXXXX	XXXXX		
1AB18-7	Cost of Local Transportation, Construction and Installation for Item No 1AB18-1 thru 1AB18-6	Lump sum	Lump sum			XXXXX	XXXXX	XXXXX	XXXXX	201,311.03	201,311.03	
Total Price for Schedule 1AB18								Baht	878,448.12	Baht	201,311.03	


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MEDIUM COST FOR BID NO. TS12-S-24

1AB19 : Switchyard Lighting Fixtures

SUPPLY AND CONSTRUCTION FOR EXPANSION OF 115 KV NONG BUA RAWE SUBSTATION (GIS)

TRANSMISSION SYSTEM EXPANSION PROJECT NO.12

Item No.	Description	Qty.	Unit	Currency	Supply of Equipment				Local Transportation, Construction and (excluding VAT) Baht			
					Foreign Supply		Local Supply		Unit Price	Amount	Unit Price	Amount
					CIF Thai Port		Ex-works Price (excluding VAT) Baht					
					Unit Price	Amount	Unit Price	Amount	Unit Price	Amount		
1AB19-1	Flood lighting fixture, LED lamp, 10000 lumen, wide-beam, complete with control gear as per Specification attached	1						13,505.80	13,505.80	XXXXX	XXXXX	
1AB19-2	Cost of Local Transportation, Construction and Installation for Item No. 1AB19-1	Lump sum	Lump sum		XXXXX	XXXXX	XXXXX	XXXXX	XXXXX	3,714.10	3,714.10	
Total Price for Schedule 1AB19										Baht	Baht	
										13,505.80	3,714.10	

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MEDIUM COST FOR BID NO. TS12-S-24
1AB20 : Aluminum Tube, Connector and Miscellaneous Hardware
SUPPLY AND CONSTRUCTION FOR EXPANSION OF 115 KV NONG BUA RAWE SUBSTATION (GIS)
TRANSMISSION SYSTEM EXPANSION PROJECT NO.12

Item No.	Description	Qty.	Unit	Currency	Supply of Equipment				Local Transportation, Construction and (excluding VAT) Baht			
					Foreign Supply		Local Supply		Unit Price	Amount	Unit Price	Amount
					CIF Thai Port		Ex-works Price (excluding VAT) Baht					
					Unit Price	Amount	Unit Price	Amount	Unit Price	Amount		
1AB20-1	115 kV and below Compression connector as per Specification attached	Lump sum	Lump sum				20,475.84	20,475.84	XXXXXX	XXXXXX		
1AB20-2	Cost of Local Transportation, Construction and Installation for Item No. 1AB20-1	Lump sum	Lump sum		XXXXXX	XXXXXX	XXXXXX	XXXXXX	4,692.38	4,692.38		
Total Price for Schedule 1AB20							Baht 20,475.84		Baht 4,692.38			



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MEDIUM COST FOR BID NO. TS12-S-24

1AB21 : Bus Fitting

SUPPLY AND CONSTRUCTION FOR EXPANSION OF 115 KV NONG BUA RAWE SUBSTATION (GIS)

TRANSMISSION SYSTEM EXPANSION PROJECT NO.12

Item No.	Description	Qty.	Unit	Currency	Supply of Equipment				Local Transportation, Construction and (excluding VAT) Baht			
					Foreign Supply		Local Supply		Unit Price	Amount	Unit Price	Amount
					CIF Thai Port		Ex-works Price (excluding VAT) Baht					
					Unit Price	Amount	Unit Price	Amount	Unit Price	Amount		
1AB21-1	115 kV and below Bus fitting as per Specification attached	Lump sum	Lump sum	THB	115,592.11	115,592.11			XXXXX	XXXXX		
1AB21-2	Cost of Local Transportation, Construction and Installation for Item No. 1AB21-1	Lump sum	Lump sum		XXXXX	XXXXX	XXXXX	XXXXX	26,489.86	26,489.86		
				THB	115,592.11		Baht		Baht			
Total Price for Schedule 1AB21									26,489.86			

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MEDIUM COST FOR BID NO. TS12-S-24

1AB22 : Grounding Material

SUPPLY AND CONSTRUCTION FOR EXPANSION OF 115 KV NONG BUA RAWE SUBSTATION (GIS)

TRANSMISSION SYSTEM EXPANSION PROJECT NO.12

Item No.	Description	Qty.	Unit	Currency	Supply of Equipment				Local Transportation, Construction and (excluding VAT) Baht			
					Foreign Supply		Local Supply		Unit Price	Amount	Unit Price	Amount
					CIF Thai Port		Ex-works Price (excluding VAT) Baht					
					Unit Price	Amount	Unit Price	Amount	Unit Price	Amount		
1AB22-1	Thermite welding material as per Specification attached	Lump sum	Lump sum					91,249.40	91,249.40	XXXXX	XXXXX	
1AB22-2	Grounding hardware as per Specification attached	Lump sum	Lump sum	THB	20,319.22	20,319.22				XXXXX	XXXXX	
1AB22-3	Cost of Local Transportation, Construction and Installation for Item No. 1AB22-1 thru 1AB22-2	Lump sum	Lump sum		XXXXX	XXXXX	XXXXX	XXXXX		25,567.81	25,567.81	
				THB	20,319.22		Baht		Baht			
Total Price for Schedule 1AB22								91,249.40		25,567.81		


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MEDIUM COST FOR BID NO. TS12-S-24

1AB23 : Substation Miscellaneous

SUPPLY AND CONSTRUCTION FOR EXPANSION OF 115 KV NONG BUA RAWE SUBSTATION (GIS)

TRANSMISSION SYSTEM EXPANSION PROJECT NO.12

Item No.	Description	Qty.	Unit	Currency	Supply of Equipment				Local Transportation, Construction and (excluding VAT) Baht			
					Foreign Supply		Local Supply		Unit Price	Amount	Unit Price	Amount
					CIF Thai Port		Ex-works Price (excluding VAT) Baht					
					Unit Price	Amount	Unit Price	Amount	Unit Price	Amount		
1AB23-1	Rigid steel conduit as per Specification attached	Lump sum	Lump sum					34,202.52	34,202.52	XXXXX	XXXXX	
1AB23-2	Fitting for rigid steel conduit as per Specification attached	Lump sum	Lump sum	THB	18,516.96	18,516.96				XXXXX	XXXXX	
1AB23-3	Identification and danger notice plate as per drawing attached	Lump sum	Lump sum					35,735.04	35,735.04	XXXXX	XXXXX	
1AB23-4	Cost of Local Transportation, Construction and Installation for Item No. 1AB23-1 thru 1AB23-3	Lump sum	Lump sum		XXXXX	XXXXX		XXXXX	XXXXX	20,270.83	20,270.83	
				THB	18,516.96		Baht		Baht			
Total Price for Schedule 1AB23								69,937.56		20,270.83		


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MEDIUM COST FOR BID NO. TS12-S-24
1AB24 : Control and Protection System
SUPPLY AND CONSTRUCTION FOR EXPANSION OF 115 KV NONG BUA RAWE SUBSTATION (GIS)
TRANSMISSION SYSTEM EXPANSION PROJECT NO.12

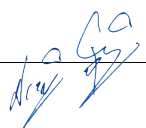
Item No.	Description	Drawing No. / Reference No.	Qty.	Unit	Currency	Supply of Equipment				Local Transportation, Construction and Installation (excluding VAT) Baht			
						Foreign Supply		Local Supply					
						CIF Thai Port		Ex-works Price (excluding VAT) Baht		Unit Price	Amount	Unit Price	Amount
						Unit Price	Amount	Unit Price	Amount				
1AB24-1	115 kV LINE PROTECTION (21, 21, 79, 1-BF, DTT)	Panel No. 705R, to be installed at the existing control building. Specification No. 1002. DWG. Nos. NBR-E-1.02, NBR-E-2.01 sh.2, NBR-E-3.2 sh.2, TP-E-9.1 and TP-E-10.1. Scope of work.	1	EA				1,782,628.00	1,782,628.00	XXXXX	XXXXX		
1AB24-2	METERING PANEL (2 kWh&kVarh METERS)	Panel No. MP3, to be installed at the existing control building. Specification No. 1002. DWG. Nos. NBR-E-1.02, NBR-E-2.01 sh.2, NBR-E-3.2 sh.2 and TP-E-5.1 sh.1-2., TP-E-10.21 sh.1.	1	EA				1,436,741.00	1,436,741.00	XXXXX	XXXXX		



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1AB24 : Control and Protection System
SUPPLY AND CONSTRUCTION FOR EXPANSION OF 115 KV NONG BUA RAWE SUBSTATION (GIS)
TRANSMISSION SYSTEM EXPANSION PROJECT NO.12

Item No.	Description	Drawing No. / Reference No.	Qty.	Unit	Currency	Supply of Equipment				Local Transportation, Construction and Installation (excluding VAT) Baht			
						Foreign Supply		Local Supply		Unit Price	Amount	Unit Price	Amount
						CIF Thai Port		Ex-works Price (excluding VAT) Baht					
						Unit Price	Amount	Unit Price	Amount	Unit Price	Amount		
1AB24-3	MCB, 0.5A, 3 POLE FOR PT	To be installed in the existing panel as follows: - one (1) for A-TDR & W&VAR-TDR circuit in the panel no. TDR7-1 Specification No. 1002. DWG. Nos. NBR-E-1.02, NBR-E-2.01 sh.2, NBR-E-3.2 sh.2. Scope of work.	1	EA				3,034.00	3,034.00	XXXXX	XXXXX		
1AB24-4	MCB, 6A, 2 POLE FOR DC SUPPLY	To be installed in the existing panel as follows: - one (1) for A-TDR & W&VAR-TDR circuit in the panel no. TDR7-1. - one (1) for 52BX circuit in the panel no. IP7-1(f) Specification No. 1002. DWG. Nos. NBR-E-1.02, NBR-E-2.01 sh.2, NBR-E-3.2 sh.2. Scope of work.	2	EA				4,419.00	8,838.00	XXXXX	XXXXX		




MEDIUM COST FOR BID NO. TS12-S-24
1AB24 : Control and Protection System
SUPPLY AND CONSTRUCTION FOR EXPANSION OF 115 KV NONG BUA RAWE SUBSTATION (GIS)
TRANSMISSION SYSTEM EXPANSION PROJECT NO.12

Item No.	Description	Drawing No. / Reference No.	Qty.	Unit	Currency	Supply of Equipment				Local Transportation, Construction and Installation (excluding VAT) Baht			
						Foreign Supply		Local Supply					
						CIF Thai Port		Ex-works Price (excluding VAT) Baht		Unit Price	Amount	Unit Price	Amount
						Unit Price	Amount	Unit Price	Amount				
1AB24-5	MCB, 3A, 1 POLE WITH AUX.	To be installed in the junction box JY1A. Specification No. 1002. DWG. Nos. NBR-E-1.02, NBR-E-2.01 sh.2, NBR-E-3.2 sh.2. Scope of work.	1	EA				1,889.00	1,889.00	XXXXX	XXXXX		
1AB24-6	TEST SWITCH (FOR METERING)	To be installed in the existing panel no. TDR7-1. Specification No. 1002. DWG. Nos. NBR-E-1.02, NBR-E-2.01 sh.2, NBR-E-3.2 sh.2. Scope of work.	1	EA				29,677.00	29,677.00	XXXXX	XXXXX		
1AB24-7	DC UNDERVOLTAGE RELAY (27XB,27XR)	To be installed in the existing panel no. IP7-1. Specification No. 1002. DWG. Nos. NBR-E-1.02, NBR-E-2.01 sh.2, NBR-E-3.2 sh.2. Scope of work.	1	EA				12,236.00	12,236.00	XXXXX	XXXXX		

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MEDIUM COST FOR BID NO. TS12-S-24
1AB24 : Control and Protection System
SUPPLY AND CONSTRUCTION FOR EXPANSION OF 115 KV NONG BUA RAWE SUBSTATION (GIS)
TRANSMISSION SYSTEM EXPANSION PROJECT NO.12

Item No.	Description	Drawing No. / Reference No.	Qty.	Unit	Currency	Supply of Equipment				Local Transportation, Construction and Installation (excluding VAT) Baht			
						Foreign Supply		Local Supply					
						CIF Thai Port		Ex-works Price (excluding VAT) Baht		Unit Price	Amount	Unit Price	Amount
						Unit Price	Amount	Unit Price	Amount				
1AB24-8	WATT AND VAR TRANSDUCER (W&VAR-TDR)	To be installed in the existing panel no. TDR7-1. Specification No. 1002. DWG. Nos. NBR-E-1.02, NBR-E-2.01 sh.2, NBR-E-3.2 sh.2. Scope of work.	1	EA				46,198.00	46,198.00	XXXXX	XXXXX		
1AB24-9	CURRENT TRANSDUCER (A-TDR 3 PH)	To be installed in the existing panel no. TDR7-1. Specification No. 1002. DWG. Nos. NBR-E-1.02, NBR-E-2.01 sh.2, NBR-E-3.2 sh.2. Scope of work.	1	EA				47,538.00	47,538.00	XXXXX	XXXXX		


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MEDIUM COST FOR BID NO. TS12-S-24
1AB24 : Control and Protection System
SUPPLY AND CONSTRUCTION FOR EXPANSION OF 115 KV NONG BUA RAWE SUBSTATION (GIS)
TRANSMISSION SYSTEM EXPANSION PROJECT NO.12

Item No.	Description	Drawing No. / Reference No.	Qty.	Unit	Currency	Supply of Equipment				Local Transportation, Construction and Installation (excluding VAT) Baht			
						Foreign Supply		Local Supply					
						CIF Thai Port		Ex-works Price (excluding VAT) Baht		Unit Price	Amount	Unit Price	Amount
						Unit Price	Amount	Unit Price	Amount				
1AB24-10	VOLTAGE TRANSDUCER (V-TDR 3 PH)	To be installed in the existing panel no. TDR7-1. Specification No. 1002. DWG. Nos. NBR-E-1.02, NBR-E-2.01 sh.2, NBR-E-3.2 sh.2. Scope of work.	1	EA				47,538.00	47,538.00	XXXXXX	XXXXXX		
1AB24-11	LATCHING RELAY (4 contacts)	To be used as 81COCX (changover contacts with Din Rail Mounted Socket), and be installed in the existing panel no. IP7-1. Specification No. 1002. DWG. Nos. NBR-E-1.02, NBR-E-2.01 sh.2, NBR-E-3.2 sh.2. Scope of work.	1	EA				6,290.00	6,290.00	XXXXXX	XXXXXX		



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MEDIUM COST FOR BID NO. TS12-S-24
1AB24 : Control and Protection System
SUPPLY AND CONSTRUCTION FOR EXPANSION OF 115 KV NONG BUA RAWE SUBSTATION (GIS)
TRANSMISSION SYSTEM EXPANSION PROJECT NO.12

Item No.	Description	Drawing No. / Reference No.	Qty.	Unit	Currency	Supply of Equipment				Local Transportation, Construction and Installation (excluding VAT) Baht			
						Foreign Supply		Local Supply					
						CIF Thai Port		Ex-works Price (excluding VAT) Baht		Unit Price	Amount	Unit Price	Amount
						Unit Price	Amount	Unit Price	Amount				
1AB24-12	TRIPPING RELAY (94P, 94BU, 51X, 79X)	To be used as 52bX (at least 5 NO with Din Rail Mounted Socket, high burden type), and be installed in the existing panel no. IP7-1. Specification No. 1002. DWG. Nos. NBR-E-1.02, NBR-E-2.01 sh.2, NBR-E-3.2 sh.2. Scope of work.	1	EA				32,758.00	32,758.00	XXXXX	XXXXX		
1AB24-13	MODIFICATION TO THE EXISTING CONTROL AND PROTECTION SYSTEM	DWG. Nos. NBR-E-1.02, NBR-E-2.01 sh.2, NBR-E-3.2 sh.2. Scope of work.	1	SET			XXXXX	XXXXX	XXXXX	XXXXX	76,560.00	76,560.00	

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MEDIUM COST FOR BID NO. TS12-S-24
1AB24 : Control and Protection System
SUPPLY AND CONSTRUCTION FOR EXPANSION OF 115 KV NONG BUA RAWE SUBSTATION (GIS)
TRANSMISSION SYSTEM EXPANSION PROJECT NO.12

Item No.	Description	Drawing No. / Reference No.	Qty.	Unit	Currency	Supply of Equipment				Local Transportation, Construction and Installation (excluding VAT) Baht			
						Foreign Supply		Local Supply					
						CIF Thai Port		Ex-works Price (excluding VAT) Baht		Unit Price	Amount	Unit Price	Amount
						Unit Price	Amount	Unit Price	Amount				
1AB24-14	COST OF LOCAL TRANSPORTATION, CONSTRUCTION AND INSTALLATION FOR ITEM NOS. 1AB24-1 THRU 1AB24-12	Scope of work.											
			Lump sum	Lump sum		XXXXX	XXXXX	XXXXX	XXXXX	345,528.00	345,528.00		
Total Price for Schedule 1AB24								Baht	3,455,365.00	Baht	422,088.00		

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MEDIUM COST FOR BID NO. TS12-S-24

1AB25 : Fault Recording System

SUPPLY AND CONSTRUCTION FOR EXPANSION OF 115 KV NONG BUA RAWE SUBSTATION (GIS)

TRANSMISSION SYSTEM EXPANSION PROJECT NO.12

Item No.	Description	Drawing No. / Reference No.	Qty.	Unit	Currency	Supply of Equipment				Local Transportation, Construction and Installation (excluding VAT) Baht					
						Foreign Supply		Local Supply		Ex-works Price (excluding VAT) Baht					
						CIF Thai Port									
						Unit Price	Amount	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount		
1AB25-1	MODIFICATION TO THE EXISTING FAULT RECORDING SYSTEM	DWG. Nos. NBR-E-1.02, NBR-E-2.01 sh.2, NBR-E-3.2 sh.2. Scope of work.	1	SET		XXXXX	XXXXX	XXXXX	XXXXX	5,742.00	5,742.00				
Total Price for Schedule 1AB25								Baht		Baht 5,742.00					


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MEDIUM COST FOR BID NO. TS12-S-24

1AB38 : Remote Terminal Unit

SUPPLY AND CONSTRUCTION FOR EXPANSION OF 115 KV NONG BUA RAWE SUBSTATION (GIS)

TRANSMISSION SYSTEM EXPANSION PROJECT NO.12

Item No.	Description	Drawing No. / Reference No.	Qty.	Unit	Currency	Supply of Equipment				Local Transportation, Construction and Installation (excluding VAT) Baht			
						Foreign Supply		Local Supply					
						CIF Thai Port		Ex-works Price (excluding VAT) Baht		Unit Price	Amount	Unit Price	Amount
						Unit Price	Amount	Unit Price	Amount				
1AB38-1	MODIFICATION TO THE EXISTING COMPUTERIZED SUBSTATION CONTROL SYSTEM	DWG. Nos. NBR-E-1.02, NBR-E-2.01 sh.2, NBR-E-3.2 sh.2. Scope of work.	1	SET		XXXXX	XXXXX	XXXXX	XXXXX	13,398.00	13,398.00		
Total Price for Schedule 1AB38									Baht	Baht	13,398.00		



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MEDIUM COST FOR BID NO. TS12-S-24

1AB39 : Commissioning

SUPPLY AND CONSTRUCTION FOR EXPANSION OF 115 KV NONG BUA RAWE SUBSTATION (GIS)

TRANSMISSION SYSTEM EXPANSION PROJECT NO.12

Item No.	Description	Qty.	Unit	Currency	Supply of Equipment				Local Transportation, Construction and (excluding VAT) Baht			
					Foreign Supply		Local Supply		Unit Price	Amount	Unit Price	Amount
					CIF Thai Port		Ex-works Price (excluding VAT) Baht					
					Unit Price	Amount	Unit Price	Amount	Unit Price	Amount		
1AB39-1	Commissioning	Lump Sum	Lump Sum		XXXXXX	XXXXXX	XXXXXX	XXXXXX	528,000.00	528,000.00		
Total Price for Schedule 1AB39							Baht		Baht 528,000.00			


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MEDIUM COST FOR BID NO. TS12-S-24

1C1 : Foundation Work

SUPPLY AND CONSTRUCTION FOR EXPANSION OF 115 KV NONG BUA RAWE SUBSTATION (GIS)

TRANSMISSION SYSTEM EXPANSION PROJECT NO.12

Item No.	Description	Drawing No. / Reference No.	Qty.	Unit	Local Currency (excluding VAT) Baht	
					Unit Price	Amount
1C1-1	115 kV Take off Structure Foundation (TS702) Bored pile Type (Pile, Dowel bar and Pile cut off are included)	FD-TS-7-09	1	set	73,978.00	73,978.00
1C1-2	115 kV Disconnecting Switch Support foundation (DS704) Pile Type (Pile, Dowel bar and Pile cut off are included)	FD-DS-7-08	1	set	53,108.00	53,108.00
1C1-3	115/230 kV General equipment support structure foundation (BP701,BP801,CC704,CT702,CT802,VT703,VT803, LA401, LA402, LA801, LA802) Long & Bored Pile Type (Pile, Dowel bar and Pile cut off are included)(CT702only)	FD-GE-0-03	3	set	24,052.00	72,156.00
1C1-4	115/230 kV General equipment support structure foundation (BP701,BP801,CC704,CT702,CT802,VT703,VT803, LA401, LA402, LA801, LA802) Long & Bored Pile Type (Pile, Dowel bar and Pile cut off are included)(VT703only)	FD-GE-0-03	3	set	24,052.00	72,156.00

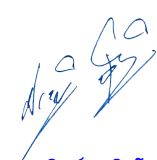
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MEDIUM COST FOR BID NO. TS12-S-24

1C1 : Foundation Work

SUPPLY AND CONSTRUCTION FOR EXPANSION OF 115 KV NONG BUA RAWE SUBSTATION (GIS)
TRANSMISSION SYSTEM EXPANSION PROJECT NO.12

Item No.	Description	Drawing No. / Reference No.	Qty.	Unit	Local Currency (excluding VAT) Baht	
					Unit Price	Amount
1C1-5	115/230 kV General equipment support structure foundation (BP701,BP801,CC704,CT702,CT802,VT703,VT803, LA401, LA402, LA801, LA802) Long & Bored Pile Type (Pile, Dowel bar and Pile cut off are included)(LA701 only)	FD-GE-0-03	3	set	24,052.00	72,156.00
1C1-6	Disconnecting Switch Operating Platform foundation (OP002)	FD-OP-0-02	1	set	2,903.00	2,903.00
Total Price for Schedule 1C1					Baht	346,457.00



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MEDIUM COST FOR BID NO. TS12-S-24

1C2 : Cable Trench


**SUPPLY AND CONSTRUCTION FOR EXPANSION OF 115 KV NONG BUA RAWE SUBSTATION (GIS)
TRANSMISSION SYSTEM EXPANSION PROJECT NO.12**

Item No.	Description	Drawing No. / Reference No.	Qty.	Unit	Local Currency (excluding VAT) Baht		
					Unit Price	Amount	
1C2-1	Standard cable trench, steel cover included (Type"A")	SD-CE-0-02 See Dwg.No.NBR-C-3		Lump sum	Lump sum	101,122.80	101,122.80
Total Price for Schedule 1C2						Baht	101,122.80


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MEDIUM COST FOR BID NO. TS12-S-24
1D24 : Spare Parts for Control and Protection System
SUPPLY AND CONSTRUCTION FOR EXPANSION OF 115 KV NONG BUA RAWE SUBSTATION (GIS)
TRANSMISSION SYSTEM EXPANSION PROJECT NO.12

Item No.	Description	Drawing No. / Reference No.	Qty.	Unit	Currency	Supply of Equipment				Local Transportation (excluding VAT) Baht			
						Foreign Supply		Local Supply					
						CIF Thai Port		Ex-works Price (excluding VAT) Baht		Unit Price		Amount	
						Unit Price	Amount	Unit Price	Amount				
1D24-1	DISTANCE RELAY (21) FOR 115 kV without 79/25	Supply as spare part (same type as supplied for item no. 1AB24-1 (21P including 67N)). 1A for current input. Specification No. 1002.	1	EA				434,791.00	434,791.00	21,740.00	21,740.00		
1D24-2	DISTANCE RELAY (21) FOR 115 kV without 79/25	Supply as spare part (same type as supplied for item no. 1AB24-1 (21BU including 67/67N, 81, 27)). 1A for current input. Specification No. 1002.	1	EA				434,791.00	434,791.00	21,740.00	21,740.00		


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MEDIUM COST FOR BID NO. TS12-S-24
1D24 : Spare Parts for Control and Protection System
SUPPLY AND CONSTRUCTION FOR EXPANSION OF 115 KV NONG BUA RAWE SUBSTATION (GIS)
TRANSMISSION SYSTEM EXPANSION PROJECT NO.12

Item No.	Description	Drawing No. / Reference No.	Qty.	Unit	Currency	Supply of Equipment				Local Transportation (excluding VAT) Baht			
						Foreign Supply		Local Supply					
						CIF Thai Port		Ex-works Price (excluding VAT) Baht		Unit Price		Amount	
						Unit Price	Amount	Unit Price	Amount				
1D24-3	AUTO RECLOSING AND SYNCHRONISM CHECK RELAY (79+25)	Supply as spare part (same type as supplied for item no. 1AB24-1). 1A for current input. Specification No. 1002.	1	EA				275,761.00	275,761.00	13,788.00	13,788.00		
1D24-4	BREAKER FAILURE RELAY (50BF+62BF)	Supply as spare part (same type as supplied for item no. 1AB24-1). 1A for current input. Specification No. 1002.	1	EA				221,233.00	221,233.00	11,062.00	11,062.00		
Total Price for Schedule 1D24								Baht 1,366,576.00		Baht 68,330.00			


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MEDIUM COST FOR BID NO. TS12-S-24
2AB5 : Current Transformer and Junction Box
SUPPLY AND CONSTRUCTION FOR EXPANSION OF 115 KV SIKHIU 2 SUBSTATION
TRANSMISSION SYSTEM EXPANSION PROJECT NO.12


Item No.	Description	Qty.	Unit	Currency	Supply of Equipment				Local Transportation, Construction and (excluding VAT) Baht			
					Foreign Supply		Local Supply		Unit Price	Amount	Unit Price	Amount
					CIF Thai Port		Ex-works Price (excluding VAT) Baht					
					Unit Price	Amount	Unit Price	Amount				
2AB5-1	115 kV CT, 550 kV BIL, 300/-/2000:1//1//1//1 A, 40 kA, oil filled as per Rating and Features RF CT78EB	6		THB	190,000.00	1,140,000.00			XXXXXX	XXXXXX		
2AB5-2	115 kV CT, 550 kV BIL, 1000x2000:1//1A, 40 kA, oil filled as per Rating and Features RF CT78EP	3		THB	134,000.00	402,000.00			XXXXXX	XXXXXX		
2AB5-3	Steel Supporting Structure for CT78EB (for Item No. 2AB5-1), H=4.50 m as per Dwg. No. ST-CT-4-01 and SD-AB-0-01	6					52,000.00	312,000.00	XXXXXX	XXXXXX		
2AB5-4	Steel Supporting Structure for CT78EP (for Item No. 2AB5-2), H=4.50 m as per Dwg. No. ST-CT-4-01 and SD-AB-0-01	3					52,000.00	156,000.00	XXXXXX	XXXXXX		
2AB5-5	Junction Box type CT1 (for Item No. 2AB5-1) as per Dwg. No. TP-E-18.2 and TP-E-18.4	2					36,000.00	72,000.00	XXXXXX	XXXXXX		
2AB5-6	Junction Box type CT3 (for Item No. 2AB5-2) as per Dwg. No. TP-E-18.2 and TP-E-18.4	1					11,000.00	11,000.00	XXXXXX	XXXXXX		

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MEDIUM COST FOR BID NO. TS12-S-24
2AB5 : Current Transformer and Junction Box
SUPPLY AND CONSTRUCTION FOR EXPANSION OF 115 KV SIKHIU 2 SUBSTATION
TRANSMISSION SYSTEM EXPANSION PROJECT NO.12


Item No.	Description	Qty.	Unit	Currency	Supply of Equipment				Local Transportation, Construction and (excluding VAT) Baht			
					Foreign Supply		Local Supply		Ex-works Price (excluding VAT) Baht			
					CIF Thai Port							
					Unit Price	Amount	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount
2AB5-7	Cost of Local Transportation, Construction and Installation for Item No. 2AB5-1 thru 2AB5-6				XXXXX	XXXXX	XXXXX	XXXXX	230,230.00	230,230.00		
		Lump sum	Lump sum									
				THB	1,542,000.00		Baht			Baht		
Total Price for Schedule 2AB5							551,000.00			230,230.00		


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MEDIUM COST FOR BID NO. TS12-S-24

**2AB6 : Coupling Capacitor Voltage Transformer, Coupling Capacitor, Voltage Transformer and Junction Box
SUPPLY AND CONSTRUCTION FOR EXPANSION OF 115 KV SIKHIU 2 SUBSTATION
TRANSMISSION SYSTEM EXPANSION PROJECT NO.12**

Item No.	Description	Qty.	Unit	Currency	Supply of Equipment				Local Transportation, Construction and (excluding VAT) Baht			
					Foreign Supply		Local Supply					
					CIF Thai Port		Ex-works Price (excluding VAT) Baht		Unit Price	Amount	Unit Price	Amount
					Unit Price	Amount	Unit Price	Amount				
2AB6-1	115 kV voltage transformer, 550 kV BIL, 115000/√3 : 115.47/57.74 & 115.47/57.74 & 110 V oil filled as per ratings and features RF VT7011	3		THB	155,000.00	465,000.00			XXXXXX	XXXXXX		
2AB6-2	Steel Supporting Structure for VT7011 (for Item No. 2AB6-1), H= 4.50 m. as per EGAT's Dwg. No. ST-VT-4-01 and SD-AB-0-01	3					43,000.00	129,000.00	XXXXXX	XXXXXX		
2AB6-3	Junction Box type PT14 (for Item No. 2AB6-1) as per Dwg. No. TP-E-18.1-3/4, 4/4 and TP-E-18.4	1					48,000.00	48,000.00	XXXXXX	XXXXXX		
2AB6-4	Cost of Local Transportation, Construction and Installation for Item No. 2AB6-1 thru 2AB6-3	Lump sum	Lump sum		XXXXXX	XXXXXX	XXXXXX	XXXXXX	70,620.00	70,620.00		
				THB	465,000.00		Baht		Baht			
Total Price for Schedule 2AB6							177,000.00		70,620.00			


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MEDIUM COST FOR BID NO. TS12-S-24

2AB9 : Power Circuit Breaker

SUPPLY AND CONSTRUCTION FOR EXPANSION OF 115 KV SIKHIU 2 SUBSTATION

TRANSMISSION SYSTEM EXPANSION PROJECT NO.12

Item No.	Description	Qty.	Unit	Currency	Supply of Equipment				Local Transportation, Construction and (excluding VAT) Baht			
					Foreign Supply		Local Supply		Ex-works Price (excluding VAT) Baht			
					CIF Thai Port							
					Unit Price	Amount	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount
2AB9-1	123 kV 3150 A 40 kA GCB as per Ratings and Features RF CB7846(IEC)	2		THB	673,907.00	1,347,814.00			XXXXX	XXXXX		
2AB9-2	Steel Supporting Structure for CB7846(IEC)* as per EGAT's Dwg. No. ST-CB-7-01	2		THB	87,061.00	174,122.00			XXXXX	XXXXX		
2AB9-3	Cost of Local Transportation, Construction and Installation for Item No. 2AB9-1 thru 2AB9-2	Lump sum	Lump sum		XXXXX	XXXXX	XXXXX	XXXXX	167,412.96	167,412.96		
				THB	1,521,936.00		Baht		Baht			
Total Price for Schedule 2AB9									167,412.96			

*The design of supporting structures of circuit breaker shall be verified by circuit breaker manufacturer.

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MEDIUM COST FOR BID NO. TS12-S-24

2AB10 : Disconnecting Switch

SUPPLY AND CONSTRUCTION FOR EXPANSION OF 115 KV SIKHIU 2 SUBSTATION

TRANSMISSION SYSTEM EXPANSION PROJECT NO.12

Item No.	Description	Qty.	Unit	Currency	Supply of Equipment				Local Transportation, Construction and (excluding VAT) Baht			
					Foreign Supply		Local Supply					
					CIF Thai Port		Ex-works Price (excluding VAT) Baht		Unit Price	Amount	Unit Price	Amount
					Unit Price	Amount	Unit Price	Amount				
2AB10-1	123 kV 3150 A air switch (high creepage) manually gang operated as per Ratings and Features RF DS78BH(IEC) (phase spacing = 2.25 m)	7		THB	261,096.00	1,827,672.00			XXXXX	XXXXX		
2AB10-2	Steel Supporting Structure for DS78BH (IEC) as per EGAT's Dwg. No. ST-DS-4-01 and SD-AB-0-01, H = 5.30 m	7					82,717.00	579,019.00	XXXXX	XXXXX		
2AB10-3	Cost of Local Transportation, Construction and Installation for Item No. 2AB10-1 thru 2AB10-2		Lump sum	Lump sum	XXXXXX	XXXXXX	XXXXXX	XXXXXX	264,736.01	264,736.01		
				THB	1,827,672.00		Baht		Baht			
Total Price for Schedule 2AB10							579,019.00		264,736.01			


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MEDIUM COST FOR BID NO. TS12-S-24
2AB12 : AC&DC Distribution Board and Termination Box
SUPPLY AND CONSTRUCTION FOR EXPANSION OF 115 KV SIKHIU 2 SUBSTATION
TRANSMISSION SYSTEM EXPANSION PROJECT NO.12

Item No.	Description	Qty.	Unit	Currency	Supply of Equipment				Local Transportation, Construction and (excluding VAT) Baht			
					Foreign Supply		Local Supply		Unit Price	Amount	Unit Price	Amount
					CIF Thai Port		Ex-works Price (excluding VAT) Baht					
					Unit Price	Amount	Unit Price	Amount	Unit Price	Amount		
2AB12-1	Termination Box type TB1 as per Dwg No. LT-TB-0-01	4					3,236.00	12,944.00	XXXXX	XXXXX		
2AB12-2	Cost of Local Transportation, Construction and Installation for Item No. 2AB12-1	Lump sum	Lump sum		XXXXX	XXXXX	XXXXX	XXXXX	1,423.84	1,423.84		
Total Price for Schedule 2AB12							Baht	12,944.00	Baht	1,423.84		

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MEDIUM COST FOR BID NO. TS12-S-24

2AB14 : Substation Steel Structure

SUPPLY AND CONSTRUCTION FOR EXPANSION OF 115 KV SIKHIU 2 SUBSTATION

TRANSMISSION SYSTEM EXPANSION PROJECT NO.12

Item No.	Description	Qty.	Unit	Currency	Supply of Equipment				Local Transportation, Construction and (excluding VAT) Baht			
					Foreign Supply		Local Supply		Unit Price	Amount	Unit Price	Amount
					CIF Thai Port		Ex-works Price (excluding VAT) Baht					
					Unit Price	Amount	Unit Price	Amount	Unit Price	Amount		
2AB14-1	115 kV take-off structure (TS702) as per Dwg. No. ST-TS-7-02	5						192,856.94	964,284.70	XXXXX	XXXXX	
2AB14-2	115 kV beam (BB703) as per Dwg. No. ST-BB-7-03	3						67,124.23	201,372.69	XXXXX	XXXXX	
2AB14-3	Disconnecting switch operating platform (OP002) as per Dwg. No. ST-OP-0-02	7						12,523.18	87,662.26	XXXXX	XXXXX	
2AB14-4	115 kV bus pole structure (BP705) as per Dwg. No. ST-BP-7-01 (H = 6.00 m)	12						21,539.87	258,478.44	XXXXX	XXXXX	
2AB14-5	115 kV bus pole structure (BP706) as per Dwg. No. ST-BP-7-01 (H = 4.00 m)	6						16,788.07	100,728.42	XXXXX	XXXXX	
2AB14-6	Cost of Local Transportation, Construction and Installation for Item No. 2AB14-1 thru 2AB14-5	Lump sum	Lump sum					XXXXX	XXXXX	XXXXX	XXXXX	
Total Price for Schedule 2AB14								Baht 1,612,526.51		Baht 443,444.79		


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MEDIUM COST FOR BID NO. TS12-S-24

2AB15 : Insulator

SUPPLY AND CONSTRUCTION FOR EXPANSION OF 115 KV SIKHIU 2 SUBSTATION

TRANSMISSION SYSTEM EXPANSION PROJECT NO.12

Item No.	Description	Qty.	Unit	Currency	Supply of Equipment				Local Transportation, Construction and (excluding VAT) Baht			
					Foreign Supply		Local Supply		Unit Price	Amount	Unit Price	Amount
					CIF Thai Port		Ex-works Price (excluding VAT) Baht					
					Unit Price	Amount	Unit Price	Amount	Unit Price	Amount		
2AB15-1	115 kV station post insulator ANSI TR. No. 286, high creepage distance of not less than 3,025 mm. as per Specification attached	Lump sum	Lump sum		supplied by EGAT	supplied by EGAT	supplied by EGAT	supplied by EGAT	XXXXX	XXXXX		
2AB15-2	Suspension insulator ANSI 52-3 as per Specification attached	Lump sum	Lump sum		supplied by EGAT	supplied by EGAT	supplied by EGAT	supplied by EGAT	XXXXX	XXXXX		
2AB15-3	Cost of Local Transportation, Construction and Installation for Item No. 2AB15-1 thru 2AB15-2	Lump sum	Lump sum		XXXXXX	XXXXXX	XXXXXX	XXXXXX	53,754.86	53,754.86		
Total Price for Schedule 2AB15							Baht	Baht		53,754.86		


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MEDIUM COST FOR BID NO. TS12-S-24
2AB18 : Low Voltage Cable and Conductor
SUPPLY AND CONSTRUCTION FOR EXPANSION OF 115 KV SIKHIU 2 SUBSTATION
TRANSMISSION SYSTEM EXPANSION PROJECT NO.12

Item No.	Description	Qty.	Unit	Currency	Supply of Equipment				Local Transportation, Construction and (excluding VAT) Baht			
					Foreign Supply		Local Supply		Unit Price	Amount	Unit Price	Amount
					CIF Thai Port		Ex-works Price (excluding VAT) Baht					
					Unit Price	Amount	Unit Price	Amount	Unit Price	Amount		
2AB18-1	750 V power cable as per Specification attached	Lump sum	Lump sum				173,874.36	173,874.36	XXXXX	XXXXX		
2AB18-2	600 V control cable with PVC insulation as per Specification attached	Lump sum	Lump sum				1,534,035.36	1,534,035.36	XXXXX	XXXXX		
2AB18-3	750 V lighting cable (THW) as per Specification attached	Lump sum	Lump sum				1,650.00	1,650.00	XXXXX	XXXXX		
2AB18-4	750 V lighting cable (NYY) as per Specification attached	Lump sum	Lump sum				32,472.00	32,472.00	XXXXX	XXXXX		
2AB18-5	Annealed copper ground wire as per Specification attached	Lump sum	Lump sum				663,775.20	663,775.20	XXXXX	XXXXX		
2AB18-6	Overhead ground wire as per Specification attached	Lump sum	Lump sum				14,731.20	14,731.20	XXXXX	XXXXX		
2AB18-7	Aluminum conductor as per Specification attached	Lump sum	Lump sum				234,300.00	234,300.00	XXXXX	XXXXX		
2AB18-8	Cost of Local Transportation, Construction and Installation for Item No. 2AB18-1 thru 2AB18-7	Lump sum	Lump sum		XXXXX	XXXXX	XXXXX	XXXXX	608,400.40	608,400.40		
Total Price for Schedule 2AB18							Baht 2,654,838.12		Baht 608,400.40			

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MEDIUM COST FOR BID NO. TS12-S-24
2AB19 : Switchyard Lighting Fixtures
SUPPLY AND CONSTRUCTION FOR EXPANSION OF 115 KV SIKHIU 2 SUBSTATION
TRANSMISSION SYSTEM EXPANSION PROJECT NO.12

Item No.	Description	Qty.	Unit	Currency	Supply of Equipment				Local Transportation, Construction and (excluding VAT) Baht			
					Foreign Supply		Local Supply		Unit Price	Amount	Unit Price	Amount
					CIF Thai Port		Ex-works Price (excluding VAT) Baht					
					Unit Price	Amount	Unit Price	Amount	Unit Price	Amount		
2AB19-1	Flood lighting fixture, LED lamp, 10000 lumen, wide-beam, complete with control gear as per Specification attached	4						13,505.80	54,023.20	XXXXX	XXXXX	
2AB19-2	Cost of Local Transportation, Construction and Installation for Item No. 2AB19-1	Lump sum	Lump sum		XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX	14,856.38	14,856.38	
Total Price for Schedule 2AB19								Baht	54,023.20	Baht	14,856.38	



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MEDIUM COST FOR BID NO. TS12-S-24
2AB20 : Aluminum Tube, Connector and Miscellaneous Hardware
SUPPLY AND CONSTRUCTION FOR EXPANSION OF 115 KV SIKHIU 2 SUBSTATION
TRANSMISSION SYSTEM EXPANSION PROJECT NO.12

Item No.	Description	Qty.	Unit	Currency	Supply of Equipment				Local Transportation, Construction and (excluding VAT) Baht			
					Foreign Supply		Local Supply		Unit Price	Amount	Unit Price	Amount
					CIF Thai Port		Ex-works Price (excluding VAT) Baht					
					Unit Price	Amount	Unit Price	Amount	Unit Price	Amount		
2AB20-1	Aluminum tube as per Specification attached	Lump sum	Lump sum				320,478.84	320,478.84	XXXXX	XXXXX		
2AB20-2	115 kV and below Compression connector as per Specification attached	Lump sum	Lump sum				136,984.32	136,984.32	XXXXX	XXXXX		
2AB20-3	115 kV and below Miscellaneous hardware as per Specification attached	Lump sum	Lump sum				109,915.06	109,915.06	XXXXX	XXXXX		
2AB20-4	Cost of Local Transportation, Construction and Installation for Item No. 2AB20-1 thru 2AB20-3	Lump sum	Lump sum		XXXXX	XXXXX	XXXXX	XXXXX	130,024.18	130,024.18		
Total Price for Schedule 2AB20								Baht 567,378.22	Baht 130,024.18			



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MEDIUM COST FOR BID NO. TS12-S-24

2AB21 : Bus Fitting

SUPPLY AND CONSTRUCTION FOR EXPANSION OF 115 KV SIKHIU 2 SUBSTATION

TRANSMISSION SYSTEM EXPANSION PROJECT NO.12

Item No.	Description	Qty.	Unit	Currency	Supply of Equipment				Local Transportation, Construction and (excluding VAT) Baht			
					Foreign Supply		Local Supply		Ex-works Price (excluding VAT) Baht			
					CIF Thai Port							
					Unit Price	Amount	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount
2AB21-1	115 kV and below Bus fitting as per Specification attached	Lump sum	Lump sum	THB	441,372.74	441,372.74			XXXXX	XXXXX		
2AB21-2	Cost of Local Transportation, Construction and Installation for Item No. 2AB21-1	Lump sum	Lump sum		XXXXX	XXXXX	XXXXX	XXXXX	101,147.92	101,147.92		
				THB	441,372.74		Baht		Baht			
Total Price for Schedule 2AB21									101,147.92			

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MEDIUM COST FOR BID NO. TS12-S-24

2AB22 : Grounding Material

SUPPLY AND CONSTRUCTION FOR EXPANSION OF 115 KV SIKHIU 2 SUBSTATION

TRANSMISSION SYSTEM EXPANSION PROJECT NO.12

Item No.	Description	Qty.	Unit	Currency	Supply of Equipment				Local Transportation, Construction and (excluding VAT) Baht			
					Foreign Supply		Local Supply		Unit Price	Amount	Unit Price	Amount
					CIF Thai Port		Ex-works Price (excluding VAT) Baht					
					Unit Price	Amount	Unit Price	Amount	Unit Price	Amount		
2AB22-1	Thermite welding material as per Specification attached	Lump sum	Lump sum					238,207.60	238,207.60	XXXXX	XXXXX	
2AB22-2	Grounding hardware as per Specification attached	Lump sum	Lump sum	THB	114,240.00	114,240.00				XXXXX	XXXXX	
2AB22-3	Cost of Local Transportation, Construction and Installation for Item No. 2AB22-1 thru 2AB22-2	Lump sum	Lump sum		XXXXX	XXXXX	XXXXX	XXXXX	80,769.24	80,769.24		
				THB	114,240.00		Baht		Baht			
Total Price for Schedule 2AB22								238,207.60		80,769.24		

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MEDIUM COST FOR BID NO. TS12-S-24

2AB23 : Substation Miscellaneous

SUPPLY AND CONSTRUCTION FOR EXPANSION OF 115 KV SIKHIU 2 SUBSTATION


TRANSMISSION SYSTEM EXPANSION PROJECT NO.12

Item No.	Description	Qty.	Unit	Currency	Supply of Equipment				Local Transportation, Construction and (excluding VAT) Baht			
					Foreign Supply		Local Supply		Unit Price	Amount	Unit Price	Amount
					CIF Thai Port		Ex-works Price (excluding VAT) Baht					
					Unit Price	Amount	Unit Price	Amount	Unit Price	Amount		
2AB23-1	Rigid steel conduit as per Specification attached	Lump sum	Lump sum					120,386.64	120,386.64	XXXXX	XXXXX	
2AB23-2	Fitting for rigid steel conduit as per Specification attached	Lump sum	Lump sum	THB	69,938.88	69,938.88				XXXXX	XXXXX	
2AB23-3	Identification and danger notice plate as per drawing attached	Lump sum	Lump sum					107,205.12	107,205.12	XXXXX	XXXXX	
2AB23-4	Cost of Local Transportation, Construction and Installation for Item No. 2AB23-1 thru 2AB23-3	Lump sum	Lump sum		XXXXX	XXXXX		XXXXX	XXXXX	68,184.11	68,184.11	
				THB	69,938.88		Baht			Baht		
Total Price for Schedule 2AB23								227,591.76		68,184.11		


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MEDIUM COST FOR BID NO. TS12-S-24
2AB24 : Control and Protection System
SUPPLY AND CONSTRUCTION FOR EXPANSION OF 115 KV SIKHIU 2 SUBSTATION
TRANSMISSION SYSTEM EXPANSION PROJECT NO.12

Item No.	Description	Drawing No. / Reference No.	Qty.	Unit	Currency	Supply of Equipment				Local Transportation, Construction and Installation (excluding VAT) Baht			
						Foreign Supply		Local Supply					
						CIF Thai Port		Ex-works Price (excluding VAT) Baht		Unit Price	Amount	Unit Price	Amount
						Unit Price	Amount	Unit Price	Amount				
2AB24-1	115 kV LINE PROTECTION (21,21,79,2BF,DTT)	Panel No. 11R, to be installed at the existing control building. Specification No. 1002. DWG. Nos. SKI2-E-1.2, SKI2-E-2.2, SKI2-E-3, TP-E-9.1 and TP-E-10.1. Scope of work.	1	EA				2,442,425.00	2,442,425.00	XXXXX	XXXXX		
2AB24-2	kWh&kVARh METER	Energy meters with housing racks, to be installed in the existing panel no. MP1. Specification No. 1002. DWG. Nos. SKI2-E-1.2, SKI2-E-2.2 and TP-E-5.1 sh.1-2. Scope of work.	2	EA			550,118.00	1,100,236.00	XXXXX	XXXXX			


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MEDIUM COST FOR BID NO. TS12-S-24
2AB24 : Control and Protection System
SUPPLY AND CONSTRUCTION FOR EXPANSION OF 115 KV SIKHIU 2 SUBSTATION
TRANSMISSION SYSTEM EXPANSION PROJECT NO.12

Item No.	Description	Drawing No. / Reference No.	Qty.	Unit	Currency	Supply of Equipment				Local Transportation, Construction and Installation (excluding VAT) Baht			
						Foreign Supply		Local Supply					
						CIF Thai Port		Ex-works Price (excluding VAT) Baht		Unit Price	Amount	Unit Price	Amount
						Unit Price	Amount	Unit Price	Amount				
2AB24-3	MCB, 0.5A, 3 POLE FOR PT	To be installed in the existing panel as follows: - one (1) for A-TDR & W&VAR-TDR circuit in the panel no. TDR7-1 - two (2) for kWh & kVARh circuit in the panel no. MP1 Specification No. 1002. DWG. Nos. SKI2-E-1.2, SKI2-E-2.2 and TP-E-5.1 sh.1-2. Scope of work.	3	EA									
								3,034.00	9,102.00	XXXXX	XXXXX		

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2AB24 : Control and Protection System
SUPPLY AND CONSTRUCTION FOR EXPANSION OF 115 KV SIKHIU 2 SUBSTATION
TRANSMISSION SYSTEM EXPANSION PROJECT NO.12

Item No.	Description	Drawing No. / Reference No.	Qty.	Unit	Currency	Supply of Equipment				Local Transportation, Construction and Installation (excluding VAT) Baht			
						Foreign Supply		Local Supply		Ex-works Price (excluding VAT) Baht		Baht	
						CIF Thai Port		Ex-works Price (excluding VAT) Baht					
						Unit Price	Amount	Unit Price	Amount	Unit Price	Amount		
2AB24-4	MCB, 6A, 2 POLE FOR DC SUPPLY	To be installed in the existing panel as follows: - two (2) for kWh & kVARh circuit in the panel no. MP1 - one (1) for A-TDR & W&VAR-TDR circuit in the panel no. TDR7-1 - one (1) for 52BX circuit in the panel no. IP7-1 Specification No. 1002. DWG. Nos. SKI2-E-1.2, SKI2-E-2.2 and TP-E-5.1 sh.1-2. Scope of work.	4	EA					4,419.00	17,676.00	XXXXX	XXXXX	
2AB24-5	MCB, 3A, 2 POLE FOR DC SUPPLY	To be installed in the existing panel no. MP1. Specification No. 1002. DWG. Nos. SKI2-E-1.2, SKI2-E-2.2 and TP-E-5.1 sh.1-2. Scope of work.	2	EA					7,032.00	14,064.00	XXXXX	XXXXX	

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MEDIUM COST FOR BID NO. TS12-S-24
2AB24 : Control and Protection System
SUPPLY AND CONSTRUCTION FOR EXPANSION OF 115 KV SIKHIU 2 SUBSTATION
TRANSMISSION SYSTEM EXPANSION PROJECT NO.12

Item No.	Description	Drawing No. / Reference No.	Qty.	Unit	Currency	Supply of Equipment				Local Transportation, Construction and Installation (excluding VAT) Baht		
						Foreign Supply		Local Supply				
						CIF Thai Port		Ex-works Price (excluding VAT) Baht				
						Unit Price	Amount	Unit Price	Amount	Unit Price	Amount	
2AB24-6	TEST SWITCH (FOR METERING)	To be installed in the existing panel as follows: - one (1) for A-TDR & W&VAR-TDR circuit in the panel - two (2) for kWh & kVARh circuit in the panel no. MP1 no. TDR7-1 Specification No. 1002. DWG. Nos. SKI2-E-1.2, SKI2-E-2.2 and TP-E-5.1 sh.1-2. Scope of work.	3	EA					29,677.00	89,031.00	XXXXX	XXXXX

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MEDIUM COST FOR BID NO. TS12-S-24
2AB24 : Control and Protection System
SUPPLY AND CONSTRUCTION FOR EXPANSION OF 115 KV SIKHIU 2 SUBSTATION
TRANSMISSION SYSTEM EXPANSION PROJECT NO.12

Item No.	Description	Drawing No. / Reference No.	Qty.	Unit	Currency	Supply of Equipment				Local Transportation, Construction and Installation (excluding VAT) Baht					
						Foreign Supply		Local Supply							
						CIF Thai Port		Ex-works Price (excluding VAT) Baht		Unit Price	Amount	Unit Price	Amount	Unit Price	Amount
						Unit Price	Amount	Unit Price	Amount						
2AB24-7	DC UNDERVOLTAGE RELAY (27XB,27XR)	To be installed in the existing panel as follows: - one (1) for 52bX circuit in the panel no. IP7-1 - two (2) for kWh & kVARh circuit in the panel no. MP1 Specification No. 1002. DWG. Nos. SKI2-E-1.2, SKI2-E-2.2 and TP-E-5.1 sh.1-2. Scope of work.	3	EA					12,236.00	36,708.00	XXXXX	XXXXX			
2AB24-8	WATT AND VAR TRANSDUCER (W&VAR-TDR)	To be installed in the existing panel no. TDR7-1. Specification No. 1002. DWG. Nos. SKI2-E-1.2, SKI2-E-2.2. Scope of work.	1	EA					46,198.00	46,198.00	XXXXX	XXXXX			


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2AB24 : Control and Protection System
SUPPLY AND CONSTRUCTION FOR EXPANSION OF 115 KV SIKHIU 2 SUBSTATION
TRANSMISSION SYSTEM EXPANSION PROJECT NO.12

Item No.	Description	Drawing No. / Reference No.	Qty.	Unit	Currency	Supply of Equipment				Local Transportation, Construction and Installation (excluding VAT) Baht			
						Foreign Supply		Local Supply		Ex-works Price (excluding VAT) Baht		Baht	
						CIF Thai Port		Unit Price					
						Unit Price	Amount	Unit Price	Amount	Unit Price	Amount		
2AB24-9	CURRENT TRANSDUCER (A-TDR 3 PH)	To be installed in the existing panel no. TDR7-1. Specification No. 1002. DWG. Nos. SKI2-E-1.2, SKI2-E-2.2. Scope of work.	1	EA				47,538.00	47,538.00	XXXXX	XXXXX		
2AB24-10	VOLTAGE TRANSDUCER (V-TDR 3 PH)	To be installed in the existing panel no. TDR7-1. Specification No. 1002. DWG. Nos. SKI2-E-1.2, SKI2-E-2.2 . Scope of work.	1	EA				47,538.00	47,538.00	XXXXX	XXXXX		


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MEDIUM COST FOR BID NO. TS12-S-24
2AB24 : Control and Protection System
SUPPLY AND CONSTRUCTION FOR EXPANSION OF 115 KV SIKHIU 2 SUBSTATION
TRANSMISSION SYSTEM EXPANSION PROJECT NO.12

Item No.	Description	Drawing No. / Reference No.	Qty.	Unit	Currency	Supply of Equipment				Local Transportation, Construction and Installation (excluding VAT) Baht			
						Foreign Supply		Local Supply					
						CIF Thai Port		Ex-works Price (excluding VAT) Baht		Unit Price	Amount	Unit Price	Amount
						Unit Price	Amount	Unit Price	Amount				
2AB24-11	LATCHING RELAY (4 contacts)	To be used as 81COCX (changover contacts with Din Rail Mounted Socket), and be installed in the existing panel no. IP7-1. Specification No. 1002. DWG. Nos. SKI2-E-1.2, SKI2-E-2.2. Scope of work.	1	EA				6,290.00	6,290.00	XXXXXX	XXXXXX		
2AB24-12	TERMINAL BLOCK FOR PT AND CONTROL CIRCUIT	To be installed in the existing panel no. MP1. Specification No. 1002. DWG. Nos. SKI2-E-1.2, SKI2-E-2.2, and TP-E-5.1 sh.1-2. Scope of work.	1	LOT				1,056.00	1,056.00	XXXXXX	XXXXXX		


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2AB24 : Control and Protection System
SUPPLY AND CONSTRUCTION FOR EXPANSION OF 115 KV SIKHIU 2 SUBSTATION
TRANSMISSION SYSTEM EXPANSION PROJECT NO.12

Item No.	Description	Drawing No. / Reference No.	Qty.	Unit	Currency	Supply of Equipment				Local Transportation, Construction and Installation (excluding VAT) Baht			
						Foreign Supply		Local Supply		Unit Price	Amount	Unit Price	Amount
						CIF Thai Port		Ex-works Price (excluding VAT) Baht					
						Unit Price	Amount	Unit Price	Amount	Unit Price	Amount		
2AB24-13	TERMINAL BLOCK WITH KNIFE SWITCH	To be installed in the existing panel no. MP1. Specification No. 1002. DWG. Nos. SKI2-E-1.2, SKI2-E-2.2, and TP-E-5.1 sh.1-2. Scope of work.	1	LOT				864.00	864.00	XXXXX	XXXXX		
2AB24-14	TERMINAL BLOCK FOR POWER SUPPLY CIRCUIT	To be installed in the existing panel no. MP1. Specification No. 1002. DWG. Nos. SKI2-E-1.2, SKI2-E-2.2, and TP-E-5.1 sh.1-2. Scope of work.	1	LOT				392.00	392.00	XXXXX	XXXXX		
2AB24-15	TERMINAL BLOCK FOR CT CIRCUIT	To be installed in the existing panel no. MP1. Specification No. 1002. DWG. Nos. SKI2-E-1.2, SKI2-E-2.2, and TP-E-5.1 sh.1-2. Scope of work.	1	LOT				2,682.00	2,682.00	XXXXX	XXXXX		

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MEDIUM COST FOR BID NO. TS12-S-24
2AB24 : Control and Protection System
SUPPLY AND CONSTRUCTION FOR EXPANSION OF 115 KV SIKHIU 2 SUBSTATION
TRANSMISSION SYSTEM EXPANSION PROJECT NO.12

Item No.	Description	Drawing No. / Reference No.	Qty.	Unit	Currency	Supply of Equipment				Local Transportation, Construction and Installation (excluding VAT) Baht			
						Foreign Supply		Local Supply					
						CIF Thai Port		Ex-works Price (excluding VAT) Baht		Unit Price	Amount	Unit Price	Amount
						Unit Price	Amount	Unit Price	Amount				
2AB24-16	TRIPPING RELAY (94P, 94BU, 51X, 79X)	To be used as 52bX (at least 5 NO with Din Rail Mounted Socket, high burden type), and be installed in the existing panel no. IP7-1. Specification No. 1002. DWG. Nos. SKI2-E-1.2, SKI2-E-2.2, SKI2-E-3. Scope of work.	1	EA				32,758.00	32,758.00	XXXXX	XXXXX		
2AB24-17	GPS RECEIVER PANEL	* SUPPLY BY EGAT (Panel GPS Receiver) DWG. Nos. SKI2-E-1.2, SKI2-E-2.2, SKI2-E-3, TP-E-10.15.	1	EA		XXXXX	XXXXX	XXXXX	XXXXX	XXXXX	XXXXX		
2AB24-18	MODIFICATION TO THE EXISTING CONTROL AND PROTECTION SYSTEM	DWG. Nos. NBR-E-1.02, NWR-E-2.01 sh.2, NWR-E-3.2. Scope of work.	1	SET		XXXXX	XXXXX	XXXXX	XXXXX	74,646.00	74,646.00		

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นางสาวอสิยา

นางสาวอสิยา ช่างวิทยากร

ทดส-ท.

10 มี.ค. 66

MEDIUM COST FOR BID NO. TS12-S-24
2AB24 : Control and Protection System
SUPPLY AND CONSTRUCTION FOR EXPANSION OF 115 KV SIKHIU 2 SUBSTATION
TRANSMISSION SYSTEM EXPANSION PROJECT NO.12

Item No.	Description	Drawing No. / Reference No.	Qty.	Unit	Currency	Supply of Equipment				Local Transportation, Construction and Installation (excluding VAT) Baht		
						Foreign Supply		Local Supply				
						CIF Thai Port		Ex-works Price (excluding VAT) Baht				
						Unit Price	Amount	Unit Price	Amount	Unit Price	Amount	
2AB24-19	COST OF LOCAL TRANSPORTATION, CONSTRUCTION AND INSTALLATION FOR ITEM NOS. 2AB24-1 THRU 2AB24-17	Scope of work.				XXXXXX	XXXXXX	XXXXXX	XXXXXX	459,830.00	459,830.00	
Total Price for Schedule 2AB24									Baht	3,894,558.00	Baht	534,476.00

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อาภา ชีวอินทร

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10 มี.ค. 66

MEDIUM COST FOR BID NO. TS12-S-24
2AB25 : Fault Recording System
SUPPLY AND CONSTRUCTION FOR EXPANSION OF 115 KV SIKHIU 2 SUBSTATION
TRANSMISSION SYSTEM EXPANSION PROJECT NO.12

Item No.	Description	Drawing No. / Reference No.	Qty.	Unit	Currency	Supply of Equipment				Local Transportation, Construction and Installation			
						Foreign Supply		Local Supply		Ex-works Price (excluding VAT)		Baht	
						CIF Thai Port		Ex-works Price (excluding VAT)		Baht		Baht	
						Unit Price	Amount	Unit Price	Amount	Unit Price	Amount		
2AB25-1	FAULT RECORDING SYSTEM, 16 ANALOG INPUT, 32 DIGITAL INPUT.	To be installed at the existing control building. Specification No. 1003. DWG. Nos. SKI2-E-1.2, SKI2-E-2.2. Scope of work.	1	EA				1,615,255.00	1,615,255.00	XXXXX	XXXXX		
2AB25-2	Cost of Local Transportation, Construction and Installation for Item No.2AB25-1	Scope of work.	Lump sum	Lump sum		XXXXX	XXXXX	XXXXX	XXXXX	161,525.00	161,525.00		
Total Price for Schedule 2AB25								Baht	1,615,255.00	Baht	161,525.00		

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MEDIUM COST FOR BID NO. TS12-S-24
2AB38 : Remote Terminal Unit
SUPPLY AND CONSTRUCTION FOR EXPANSION OF 115 KV SIKHIU 2 SUBSTATION
TRANSMISSION SYSTEM EXPANSION PROJECT NO.12

Item No.	Description	Drawing No. / Reference No.	Qty.	Unit	Currency	Supply of Equipment				Local Transportation, Construction and Installation (excluding VAT) Baht	
						Foreign Supply		Local Supply			
						CIF Thai Port		Ex-works Price (excluding VAT) Baht			
						Unit Price	Amount	Unit Price	Amount	Unit Price	Amount
2AB38-1	MODIFICATION TO THE EXISTING COMPUTERIZED SUBSTATION CONTROL SYSTEM	DWG. Nos. SKI2-E-1.2, SKI2-E-2.2, SKI2-E-3. Scope of work.	1	SET		XXXXX	XXXXX	XXXXX	XXXXX	13,398.00	13,398.00
Total Price for Schedule 2AB38								Baht		Baht 13,398.00	



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MEDIUM COST FOR BID NO. TS12-S-24

2AB39 : Commissioning

SUPPLY AND CONSTRUCTION FOR EXPANSION OF 115 KV SIKHIU 2 SUBSTATION

TRANSMISSION SYSTEM EXPANSION PROJECT NO.12

Item No.	Description	Qty.	Unit	Currency	Supply of Equipment				Local Transportation, Construction and (excluding VAT) Baht			
					Foreign Supply		Local Supply		Ex-works Price (excluding VAT) Baht			
					CIF Thai Port							
					Unit Price	Amount	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount
2AB39-1	Commissioning	Lump Sum	Lump Sum		XXXXX	XXXXX	XXXXX	XXXXX	528,000.00	528,000.00		
Total Price for Schedule 2AB39							Baht		Baht 528,000.00			

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MEDIUM COST FOR BID NO. TS12-S-24**2C1 : Foundation Work****SUPPLY AND CONSTRUCTION FOR EXPANSION OF 115 KV SIKHIU 2 SUBSTATION
TRANSMISSION SYSTEM EXPANSION PROJECT NO.12**

Item No.	Description	Drawing No. / Reference No.	Qty.	Unit	Local Currency (excluding VAT) Baht	
					Unit Price	Amount
2C1-1	115 kV Take off Structure Foundation (TS702) Pile Type (Pile, Dowel bar , Pile cut off and Pile shoe are included)	FD-TS-7-07	5	set	96,476.00	482,380.00
2C1-2	115 kV Disconnecting Switch Support foundation (DS704) Pile Type (Pile, Dowel bar , Pile cut off and Pile shoe are included)	FD-DS-7-08	7	set	63,754.00	446,278.00
2C1-3	115/230 kV General equipment support structure foundation (BP701,BP801, CC704,CT702,CT802,VT703,VT803, LA401, LA402, LA801, LA802) Short Pile Type (Pile, Dowel bar , Pile cut off and Pile shoe are included)(CT702only)	FD-GE-0-02	12	set	21,910.00	262,920.00
2C1-4	115/230 kV General equipment support structure foundation (BP701,BP801, CC704,CT702,CT802,VT703,VT803, LA401, LA402, LA801, LA802) Short Pile Type (Pile, Dowel bar , Pile cut off and Pile shoe are included)(VT703only)	FD-GE-0-02	6	set	21,910.00	131,460.00
2C1-5	115 kV Circuit breaker foundation (CB701) Pile Type (Pile, Dowel bar , Pile cut off and Pile shoe are included)(LA701only)	FD-CB-7-41	3	set	54,007.00	162,021.00

MEDIUM COST FOR BID NO. TS12-S-24

2C1 : Foundation Work

**SUPPLY AND CONSTRUCTION FOR EXPANSION OF 115 KV SIKHIU 2 SUBSTATION
TRANSMISSION SYSTEM EXPANSION PROJECT NO.12**

Item No.	Description	Drawing No. / Reference No.	Qty.	Unit	Local Currency (excluding VAT) Baht	
					Unit Price	Amount
2C1-6	115/230 kV General equipment support structure foundation (BP701,BP801, CC704,CT702,CT802,VT703,VT803, LA401, LA402, LA801, LA802) Short Pile Type (Pile, Dowel bar , Pile cut off and Pile shoe are included) (BP701only)	FD-GE-0-02	18	set	21,910.00	394,380.00
2C1-7	Disconnecting Switch Operating Platform foundation (OP002)	FD-OP-0-02	7	set	2,903.00	20,321.00
Total Price for Schedule 2C1					Baht 1,899,760.00	



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MEDIUM COST FOR BID NO. TS12-S-24

2C2 : Cable Trench

**SUPPLY AND CONSTRUCTION FOR EXPANSION OF 115 KV SIKHIU 2 SUBSTATION
TRANSMISSION SYSTEM EXPANSION PROJECT NO.12**

Item No.	Description	Drawing No. / Reference No.	Qty.	Unit	Local Currency (excluding VAT) Baht	
					Unit Price	Amount
2C2-1	Standard cable trench, steel cover included (Type"A")	SD-CE-0-02 See Dwg.No.SKI2-C-3	Lump sum	Lump sum	872,895.00	872,895.00
Total Price for Schedule 2C2					Baht	872,895.00

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MEDIUM COST FOR BID NO. TS12-S-24
2D25 : Spare Parts for Fault Recording System
SUPPLY AND CONSTRUCTION FOR EXPANSION OF 115 KV SIKHIU 2 SUBSTATION
TRANSMISSION SYSTEM EXPANSION PROJECT NO.12

Item No.	Description	Drawing No. / Reference No.	Qty.	Unit	Currency	Supply of Equipment				Local Transportation (excluding VAT) Baht			
						Foreign Supply		Local Supply					
						CIF Thai Port		Ex-works Price (excluding VAT) Baht		Unit Price		Amount	
						Unit Price	Amount	Unit Price	Amount				
2D25-1	ANALOG ISOLATOR CARD	Supply as spare part (same type as supplied for item no. 2AB25-1). Specification No. 1003.	1	EA				96,107.00	96,107.00	4,805.00	4,805.00		
2D25-2	POWER SUPPLY	Supply as spare part (same type as supplied for item no. 2AB25-1). Specification No. 1003.	1	EA				39,761.00	39,761.00	1,988.00	1,988.00		
2D25-3	ACQUISITION UNIT	Supply as spare part (same type as supplied for item no. 2AB25-1). Specification No. 1003.	1	EA				28,259.00	28,259.00	1,413.00	1,413.00		
2D25-4	CPU & MEMORY MODULE 1	Supply as spare part (same type as supplied for item no. 2AB25-1). Specification No. 1003.	1	EA				94,216.00	94,216.00	4,711.00	4,711.00		
2D25-5	ANALOG ISOLATOR FOR VOLTAGE	Supply as spare part (same type as supplied for item no. 2AB25-1). Specification No. 1003.	1	EA				94,216.00	94,216.00	4,711.00	4,711.00		

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MEDIUM COST FOR BID NO. TS12-S-24
2D25 : Spare Parts for Fault Recording System
SUPPLY AND CONSTRUCTION FOR EXPANSION OF 115 KV SIKHIU 2 SUBSTATION
TRANSMISSION SYSTEM EXPANSION PROJECT NO.12

Item No.	Description	Drawing No. / Reference No.	Qty.	Unit	Currency	Supply of Equipment				Local Transportation (excluding VAT) Baht			
						Foreign Supply		Local Supply					
						CIF Thai Port		Ex-works Price (excluding VAT) Baht		Unit Price		Amount	
						Unit Price	Amount	Unit Price	Amount				
2D25-6	ANALOG ISOLATOR FOR CURRENT	Supply as spare part (same type as supplied for item no. 2AB25-1). Specification No. 1003.	1	EA				94,216.00	94,216.00	4,711.00	4,711.00		
2D25-7	DIGITAL ISOLATOR MODULE	Supply as spare part (same type as supplied for item no. 2AB25-1). Specification No. 1003.	1	EA				91,629.00	91,629.00	4,581.00	4,581.00		
2D25-8	HARD DISK & HARD DISK CONTROLLER	Supply as spare part (same type as supplied for item no. 2AB25-1). Specification No. 1003.	1	EA				84,793.00	84,793.00	4,240.00	4,240.00		
2D25-9	TELE- COMMUNICATION BOARD	Supply as spare part (same type as supplied for item no. 2AB25-1). Specification No. 1003.	1	EA				28,259.00	28,259.00	1,413.00	1,413.00		
Total Price for Schedule 2D25								Baht 651,456.00		Baht 32,573.00			

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Important Information
for
Invitation to Bid No. TS12-S-24

The purpose of this section is to inform the Bidders to **carefully study** the details of the revised terms and conditions in the bidding documents. The following provisions have been **recently revised** as stated hereunder:

Article E-16. Inspection and Tests

Terms and conditions regarding inspection and tests have been revised.

Article F-8. Drawings and Documents to be Furnished by the Contractor

Terms and conditions regarding EGAT's document management system in item a. have been added. The number of copies of the drawings and documents in Print and CD-ROM has been revised and Item c. Reproducible Drawings has been deleted.

Details in Drawings and Documents Required for Each Particular Equipment at the end of section F have been revised.

Article F-15. Liquidated Damages for Late Completion and Late Delivery

The total amount of liquidated damages shall not exceed ten (10) per cent of the total Contract Price, thereafter EGAT shall have the right, at its sole discretion, to terminate the Contract.

Article F-18. Maintenance Guarantee and Article F-19. Maintenance Security

In case all obligations on the part of the Contractor for the work under separated guarantee period under the Contract have been fulfilled, the Contractor is entitled to request EGAT to return the maintenance security guaranteed for such work regardless of the non-issuance of the Final Acceptance Certificate.

Article G-5. Safety of Personnel and Third Parties and Prevention of Accidents

Safety terms and conditions have been revised. The Contractor shall observe and comply with the revised terms and conditions including Table 1. Safety Criteria and Conditions, Table 2. Contractor's Safety Information, and Table 3. Contractor Safety Evaluation Checklist which have been added at the end of Section G.

DATA SHEET

for

Invitation to Bid No. TS12-S-24

This Section consists of provisions that are specific to each procurement and supplement the information or requirements included in Bidding Documents.

Article B-3. Bid Security

The amount of bid security shall be USD 69,720.- or THB 2,295,000.-.

Article B-4. Validity of Bids

The validity of the bid shall be for two hundred and ten (210) Days from the date specified for opening of bid.

Maintenance Guarantee Period

- For all Work except 500 kV System

The Contractor shall guarantee the proper functioning of the Work for a period of one (1) Year except the following Equipment the guarantee period of which shall be as follows :

<u>Equipment</u>	<u>Period of Guarantee (Year)</u>
- Fault Recording System	2
- Control and Protection System	2

- For 500 kV System

The Contractor shall guarantee the proper functioning of the Work for a period of five (5) Years.

Defective Equipment to be replaced with the whole new set

Not Applicable

SECTION A
INVITATION TO BID

ELECTRICITY GENERATING AUTHORITY OF THAILAND

Nonthaburi
Thailand

INVITATION TO BID NO. TS12-S-24

SUPPLY AND CONSTRUCTION FOR EXPANSION OF 115 kV NONG BUA RAWE (GIS) AND 115 kV SIKHIU 2 SUBSTATIONS

TRANSMISSION SYSTEM EXPANSION PROJECT NO.12

A-1. **Invitation**

The Electricity Generating Authority of Thailand (EGAT) hereby invites sealed bids for supply and construction for Expansion of 115 kV Nong Bua Rawe (GIS) and 115 kV Sikhiu 2 Substations under Transmission System Expansion Project No.12 as described herein in accordance with terms, conditions and Specifications described in these Bidding Documents.

A-2. **Work Description**

The supply and construction for Expansion of 115 kV Nong Bua Rawe (GIS) and 115 kV Sikhiu 2 Substations will be on a supply and construction basis, the Contractor shall be responsible for complete supply, installation, construction and also engineering design work to the standard specified and best modern practice. The substations to be constructed and the scope of work under this Invitation are described in Section H. Scope of Work.

A-3. **Eligibility of Bidders: General Requirements**

I. All Bidders shall meet the following requirements; failure to so comply shall constitute sufficient ground for rejection.

- a. The Bidder shall be a partnership, firm or company, either alone or in joint venture or in consortium.
- b. The Bidder shall be well-established and maintain a permanent place of business.

- c. The Bidder shall not be, or supply the Equipment, from the country under the state of Civil War.
- d. The Bidder shall be a juristic person who manufactures or provides such material or services, as the case may be, and not be named in the List of Work Abandoners published by the Permanent Secretary, Ministry of Finance, and/or in the Debarment List and/or in the List of Work Abandoners declared by EGAT.
- e. The Bidder shall not be a Jointly Interested Bidder with other Bidders as from the date of EGAT's issuance of the Invitation to Bid, or shall not be a person who undertakes any action as an "Obstruction of Fair Price Competition" as defined in Additional Regulation for this Invitation.
- f. The Bidder shall not either be EGAT's consultant or involving in EGAT's consultancy company under this Invitation, or have EGAT's personnel involved in his business as shareholder having voting right that can control his business, director, manager, officer, employee, agent or consultant except for the ones who are officially ordered by EGAT to act or participate therein.
- g. The Bidder shall not be the person who is privileged or protected not to be taken any legal proceeding under Thai Court; provided that such Bidder's government declares that such special privilege is waived.
- h. In case of a joint venture or consortium, the Bidder shall carry out all the work under such formation from the time of bidding until the fulfillment of the Contract.
- i. The Bidder must have purchased the bidding documents from EGAT. For a joint venture or a consortium, only one (1) member of the joint venture or consortium is required to purchase the bidding documents.***

In case the Bidder's name is not exactly the same as the purchaser's name, the purchaser shall notify EGAT of the name of the Bidder in writing prior to the bid opening time.

- II. All Bidders should preferably meet the following requirements; failure to so comply may constitute sufficient ground for rejection.
 - a. The Bidder shall have adequate fund to meet financial obligations incidental to this Contract.

- b. The Bidder shall supply documentary evidence established in accordance with Article B-8. Information to be Submitted with Bid to demonstrate adequately that he is eligible to bid and is qualified to perform the Contract if his bid is accepted. Bidder should also demonstrate his capacity to perform the Work either with or without the use of subcontractor.

A-4. Eligibility of Bidders: Technical Requirements

I. All Bidders shall meet the following requirements; failure to so comply shall constitute sufficient ground for rejection.

- a. Being well-established and maintaining a permanent place of business.

If the Bidder is a new company formed by acquisition of or merger with other companies or business units before submitting the Bid, the experience records of any of such previous companies or business units that meet the requirements set forth herein are acceptable as the experience records of the Bidder.

If Bidder is a new company formed by acquisition of or merger with other companies or business units, the pending claim of any of such previous companies or business units shall be considered pending claim of the Bidder.

Reference records of either the parent or affiliated companies shall not be considered as the record of such Bidder.

- b. The Bidder shall have one of the following qualifications regarding experiences executing contract of supply and construction substation.
 - 1) Having experience with EGAT in executing at least one (1) contract as contractor (not as subcontractor) for supply and construction of a complete 115 kV or above conventional or GIS substation, with its overall performance satisfactory to EGAT;
 - 2) Having experience in executing at least two (2) contracts as contractor (not as subcontractor) for supply and construction of a complete 115 kV or above conventional or GIS substation with other Electricity Authorities of Thailand or in an overseas country (not his own country).

Experience record of the Bidder or either member of the joint venture /consortium, including experience record derived from being a member of other joint venture or consortium in previous project(s) is acceptable. It is not allowed to combine the experience records of each member of the joint venture/consortium in order to meet the experience requirements.

- c. Further to b.1) and b.2) mentioned above, having a record of experience within the last ten (10) years on the technical knowledge and practical experience on design, construction, installation and commissioning of Equipment of a 115 kV or above complete conventional or GIS substation. Bidder shall also demonstrate his capacity to perform Work.

Experience record of the Bidder or either member of the joint venture /consortium, including experience record derived from being a member of other joint venture or consortium in previous project(s) is acceptable, provided that there is a letter from the project owner certifying that the Works as described in c. above were performed by the Bidder or either member of the joint venture/ consortium of this project. It is not allowed to combine the experience records of each member of the joint venture/consortium in order to meet the experience requirements.

With respect to item b. and c. above, reference records of either the parent or affiliated companies of the Bidder or of either member of joint venture or consortium shall not be acceptable. If the Bidder has previously formed as the joint venture/consortium with other company and the experience record(s) of the joint venture/consortium meet(s) the requirement set forth herein, such experience record(s) of the joint venture/consortium is(are) also acceptable as the experience record(s) of the Bidder.

- d. The Bidder shall propose Equipment manufactured by the qualified manufacturers who shall fulfill the following requirements :

1. Regularly manufacturing of Equipment of the type and similar ratings proposed.
2. Being well-established and maintaining a permanent place of business.
3. The manufacturer shall have the experience records that meet the requirements set forth herein.

Reference records of either parent or affiliated companies shall not be considered as the records of such manufacturer.

4. If the Manufacturer is a new company formed by acquisition of or merger with other companies or business units, and any of such previous companies or business units has the experience records that meet the requirements set forth herein, such experience records are acceptable as the experience records of the new company, provided that each item of the equipment to be supplied under this bid shall be manufactured from the same source of supply as indicated in each of such relevant supply records as described in Item I.d.5 thru I.d.8 below. Otherwise, it shall not be acceptable and shall be sufficient grounds for rejection.

For the avoidance of doubt, it is not allowed to combine the experience records of the previous companies or business units in order to meet the experience requirements.

5. For 115 kV Ratings of Gas-Insulated Switchgear (GIS). These Equipment shall be manufactured by the qualified manufacturers who shall fulfill the following requirements :

- 5.1 Having one of the following qualifications:

- 5.1.1 Proposing the Equipment of the type and ratings which has already been accepted by EGAT.

OR

- 5.1.2 Having a supply record of Equipment of the type proposed (type of enclosure, interrupter of circuit breaker, rated filling gas pressure) at the nominal system voltage of 110 kV or above, busbar current of 2000 A or above, 40 kA or above, with successful operation/use of at least three (3) consecutive years in an overseas country (not his own country) and at least three (3) substations of which total GIS bays shall not be less than twelve (12).

However, the Equipment of the type and short circuit current ratings proposed shall have a supply record of successful operation/use of at least three (3) consecutive years in an overseas country (not his own country) and at least one (1) substation of which total GIS bays shall not be less than four (4).

In case that the supply record of Equipment of the type and ratings proposed fulfills the requirement, the manufacturer may propose a newly developed or modified type of such Equipment with successful operation/use of at least three (3) substations of which total GIS bays shall not be less than twelve (12) and having minimum one (1) year in an overseas country (not his own country). The detailed information of the development or modification shall be submitted with his proposal. EGAT, however, reserves the right and will make its own judgment whether or not to consider or accept the proposed developed or modified type.

- 5.2 Having a past design test record of the Equipment as proposed, if specified in EGAT's specification. Such past design test record shall conform to the test specified in EGAT's specification.

6. For 115 kV Ratings of Power Circuit Breaker, Disconnecting Switch and Compact Switchgear shall be manufactured by the qualified manufacturers who shall fulfill the following requirements:

- 6.1 Having one of the following qualifications:

6.1.1 Proposing the Equipment of the type and ratings which has already been accepted by EGAT.

OR

6.1.2 Having a supply record of Equipment of the type proposed at nominal system voltage of 110 kV or above, 2000 A or above, 40 kA or above, with successful operation/use of at least three (3) consecutive years in an overseas country (not his own country) and at least three (3) three phase sets.

However, the Equipment of the type and short circuit current ratings proposed shall have a supply record of successful operation/use of at least three (3) consecutive years in an overseas country (not his own country) and at least one (1) three phase set.

In case that the supply record of Equipment of the type and ratings proposed fulfilled the requirement, the manufacturer may propose a newly developed or modified type of such Equipment with successful operation/use for at least one (1) year in an overseas country (not his own country) and at least three (3) three phase sets. The detailed information of the development or modification shall be submitted with his proposal. EGAT, however, reserves the right and will make its own judgment whether or not to consider or accept the proposed developed or modified type.

6.2 Having a past design test record of the Equipment as proposed, if specified in EGAT's specification. Such past design test record shall conform to the test specified in EGAT's specification.

7. For 115 kV Ratings of following Equipment: Instrument Transformer and Surge Arrester. These Equipment shall be manufactured by the qualified manufacturers who shall fulfill the following requirements:

7.1 Having one of the following qualifications:

7.1.1 Proposing the Equipment of the type and ratings which has already been accepted by EGAT.

OR

7.1.2 Having a supply record of Equipment of the type and ratings proposed with successful operation/use of at least three (3) three phase sets and having minimum three (3) consecutive years in an overseas country (not his own country).

In case that the supply record of Equipment of the type and ratings proposed fulfills the requirement, the manufacturer may propose a newly developed or modified type of such Equipment with successful operation/use of at least three (3) three phase sets and having minimum one (1) year in an overseas country (not his own country). The detailed information of the development or modification shall be submitted with his proposal. EGAT, however, reserves the right and will make its own judgment whether or not to consider or accept the proposed developed or modified type.

Supply records of the higher rating Equipment shall not be considered if the Bidder does not propose such higher rating Equipment in his bid.

- 7.2 Having a past design test record of the Equipment as proposed, if specified in EGAT's specification. Such past design test record shall conform to the test specified in EGAT's specification.
8. For Control and Protection System, having the following qualifications:
 - 8.1 Being local manufacturer.
 - 8.2 Having one of the following qualifications:
 - 8.2.1 Having a supply record of successful operation/use in EGAT's or other Electricity Authorities of Thailand's 110 kV or above Transmission System for at least three (3) consecutive years and at least three (3) units of each type of Protective Relay Panels having similar characteristics to the ones specified herein.
 - OR
 - 8.2.2 Having a letter of acceptance for manufacturing of Control and Protection Boards and/or fabrication of the specific Equipment issued by EGAT within the scope specified therein.
 - OR
 - 8.2.3 Being listed in EGAT ACCEPTED MANUFACTURER LIST FOR CONTROL AND PROTECTION PANEL (LOCAL MANUFACTURER) attached at the end of Section A. Invitation to Bid.

II. All Bidders should preferably meet the following technical requirements; failure to so comply may constitute sufficient ground for rejection.

- a. The Bidder shall have sufficient capacity to carry out the work.

- b. The Bidder shall have no just or proper claims pending against him with respect to breach in the performance of Contract on other similar works awarded by EGAT. In case the Bidder is a joint venture/consortium, either member of the joint venture/consortium shall have no just or proper claims pending against him with respect to breach in the performance of Contract on other similar works awarded by EGAT.
- c. The Bidder himself or his subcontractors, at the time of submitting this proposal, shall not carry excessive work nor be in a default position with respect to work with EGAT. Unsatisfactory past performance on Contract awarded by EGAT may be a sufficient reason of being disqualified.
- d. The Bidder shall propose Equipment from manufacturers who fulfill the requirements below. If there is any deficiency, EGAT reserves the right to require the Bidder to propose new manufacturer or new type/model of Equipment without any additional cost to EGAT.
 - 1. Regularly manufacturing of Equipment of the type and similar ratings proposed.
 - 2. Being well-established and maintaining a permanent place of business
 - 3. The manufacturer shall have the experience records that meet the requirements set forth herein.

Reference records of either parent or affiliated companies shall not be considered as the records of such manufacturer.

- 4. If the Manufacturer is a new company formed by acquisition of or merger with other companies or business units, and any of such previous companies or business units has the experience records that meet the requirements set forth herein, such experience records are acceptable as the experience records of the new company, provided that each item of the equipment to be supplied under this bid shall be manufactured from the same source of supply as indicated in each of such relevant supply records as described in Item II.d.5 thru II.d.13 below.

For the avoidance of doubt, it is not allowed to combine the experience records of the previous companies or business units in order to meet the experience requirements.

- 5. For 33, 22 and 11 kV ratings of following Equipment : Metal-Clad SF₆ Gas Insulated Switchgear, Power Circuit Breaker, Instrument Transformer, Disconnecting Switch and Surge Arrester

Having one of the following qualifications:

- 5.1 Proposing the Equipment of the type and ratings which has already been accepted by EGAT.

OR

- 5.2 Having a supply record of Equipment of the type and ratings proposed with successful operation/use of at least three (3) consecutive years in an overseas country (not his own country) and at least three (3) three phase sets. The ratings and features of Equipment shall be the same or similar rating as EGAT specifies.

In case that the supply record of Equipment of the type and ratings proposed fulfilled the requirement, the manufacturer may propose a newly developed or modified type of such Equipment with successful operation/use of at least one (1) year in an overseas country (not his own country) and at least three (3) three phase sets. The detailed information of the development or modification shall be submitted with his proposal. EGAT, however, reserves the right and will make its own judgment whether or not to consider or accept the proposed developed or modified type.

Supply records of the higher rating Equipment shall not be considered if the Bidder does not propose such higher rating Equipment in his bid.

6. For Distribution Transformer, Power Fuse, AC&DC Distribution Board and Lighting Relay Panel (LRP), Load Center Unit Substation (LCUS), Junction Box, Battery Charger, Substation Steel Structure, 33 kV and below Cable Terminations, XLPE Power Cable, Power Cable, Control Cable and Switchboard Wire, Lighting Cable, Copper Ground Wire, Overhead Ground Wire, Aluminum Conductor, Optical Fiber Cable, Switchyard Lighting Fixtures, Aluminum Tube, Compression Connector and Miscellaneous Hardware, Bus Fittings, Ground Rod, Thermite Welding Material, Grounding Hardware, Conduit and Conduit Fittings

- 6.1 Being local manufacturer for the following Equipment:

Distribution Transformer, AC&DC Distribution Board and Lighting Relay Panel (LRP), Load Center Unit Substation (LCUS), Junction Box, Battery Charger, Substation Steel Structure, 115 kV and below XLPE Power Cable, Power Cable, Control Cable and Switchboard Wire, Lighting Cable, Copper Ground Wire, Overhead Ground Wire, Aluminum Conductor, Single mode optical fiber cable, Switchyard Lighting Fixtures, Aluminum Tube, Compression Connector and Miscellaneous Hardware, Thermite Welding Material and Conduit.

- 6.2 Having been granted a licence for producing standard product by Thai Industrial Standard Institute (TISI), Ministry of Industry for the following Equipment:

60 kV through 115 kV XLPE Power Cable, Lighting cable and Aluminum conductor.

6.3 Having one of the following qualifications:

6.3.1 Having supply record of Equipment of the type and similar ratings proposed with successful operation/use for at least one (1) year.

OR

6.3.2 Having a letter of acceptance for manufacturing and/or fabrication of the specific Equipment issued by EGAT within the scope specified therein (For the local manufacturer).

7. For Insulator

Having one of the following qualifications:

7.1 Having supply record with successful operation/use for at least three (3) consecutive years in an overseas country (not his own country) and for following equipment:

7.1.1 Suspension Insulator, at least 10,000 units having the similar ANSI class as proposed.

7.1.2 Station Post Insulator, having the similar ANSI technical reference number as proposed.

OR

7.2 Having a letter of acceptance for manufacturing and/or fabrication of the specific Equipment issued by EGAT within the scope specified therein (For the local manufacturer).

8. For Stationary Battery

Having one of the following qualifications:

8.1 Having supply record of Equipment of the type and similar ratings proposed with successful operation/use in substations/switchyards of at least three (3) consecutive years and at least three (3) sets.

In case that the supply record of Equipment of the type and similar ratings proposed fulfilled the requirements, the manufacturer may propose a newly developed or modified type of such Equipment with successful operation/use of at least one (1) year. The detailed information of the development or modification shall be submitted with his proposal. EGAT, however, reserves the right and will make its own judgement whether or not to consider or accept the proposed developed or modified type.

OR

- 8.2 Having a letter of acceptance for manufacturing and/or fabrication of the specific Equipment issued by EGAT within the scope specified therein (For the local manufacturer).
9. For above 33kV through 115 kV Outdoor Type Cable Termination and Cable Termination for GIS.

Having one of the following qualifications:

- 9.1 Proposing the Equipment of the type and ratings which have ever been accepted by EGAT.

OR

- 9.2 Having a supply record of Equipment of the type and ratings proposed with successful operation/use for at least three (3) consecutive years in an overseas country (not his own country) and at least five (5) three phase sets. The ratings and features of Equipment shall be the same or similar rating as EGAT specifies.

In case that the supply record of Equipment of the type and ratings proposed fulfilled the requirement, the manufacturer may propose a newly developed or modified type of such Equipment with successful operation/use for at least one (1) year in overseas country (not his own country) and at least five (5) three phase sets. The detailed information of the development or modification shall be submitted with his proposal. EGAT, however, reserves the right and will make its own judgment whether or not to consider or accept the proposed developed or modified type.

Supply records of the higher rating Equipment shall not be accepted if the Bidder does not propose such higher rating Equipment in his bid.

10. Proposing the protective relays from the manufacturers as listed in EGAT ACCEPTED MANUFACTURER LIST FOR PROTECTIVE RELAY attached at the end of Section A. Invitation to Bid and shall be in compliance with the details specified in EGAT's Specifications. Type/Model of the main protective relays proposed shall be as specified in EGAT ACCEPTED MAIN RELAY LIST NO.1 and NO.2 attached at the end of Section A. Invitation to Bid.

11. For Fault Recording System.

11.1 Having one of the following qualifications:

- 11.1.1 The cabinet and all Equipment are completely wired by the FRS manufacturer before shipping to Thailand.

OR

11.1.2 The cabinet and the Equipment are wired in Thailand by the local cabinet manufacturer who has one of the following qualifications:

11.1.2.1 Having a letter of acceptance for manufacturing of Control and Protection Boards and/or fabrication of the specific Equipment issued by EGAT within the scope specified therein.

OR

11.1.2.2 Being listed in EGAT ACCEPTED MANUFACTURER LIST FOR CONTROL AND PROTECTION PANEL (LOCAL MANUFACTURER) attached at the end of Section A. Invitation to Bid.

The design and engineering shall be performed by the FRS manufacturer. The assembly, factory test and commissioning shall be in accordance with the FRS manufacturer's standard and shall be performed under the FRS manufacturer's supervisor.

11.2 Proposing the Fault Recording System (FRS) from the manufacturers as listed in EGAT ACCEPTED MANUFACTURER LIST FOR FAULT RECORDING SYSTEM attached at the end of Section A. Invitation to Bid and shall be in compliance with the details specified in EGAT's Specifications. Type/model of FRS proposed shall be as specified in EGAT ACCEPTED FAULT RECORDING SYSTEM LIST attached at the end of Section A. Invitation to Bid.

12. Being local manufacturer for steel supporting structure of Instrument Transformer, Surge Arrester and Disconnecting Switch.

13. For Closed-circuit television (CCTV) system and equipment

13.1 Proposed camera and Network Video Recorder (NVR) manufacturer shall have a representative or a branch office of manufacturer in Thailand for at least ten (10) years.

13.2 Proposed brand of IP cameras shall have a supply record of IP cameras for at least five hundred (500) IP cameras per contract with successful operation/use for at least three (3) years in Thailand.

13.3 The bidder or subcontractor shall have one of the following qualifications:

13.3.1 Having experiences in installation and cabling of outdoor-type IP cameras for at least fifty (50) cameras per contract with successful operation/use for at least three (3) years in Thailand.

OR

13.3.2 Having experiences in optical fiber cabling in substation switchyards for at least five (5) substations per contract with successful operation/use for at least three (3) years in Thailand.

13.4 Being local manufacturer for the following Equipment: CCTV Rack cabinet, Monitoring desk, CCTV pole, 12-core ADSS optical fiber cable.

e. Proposing the manufacturer who has no just or proper claims pending against Equipment of the same type/model to be proposed under this bid.

In case the manufacturer is a new company formed by acquisition or merger with other companies or business units, the pending claim of any of such previous companies or business units shall be considered pending claim of the manufacturer.

f. Proposing reputable subcontractors, for the portion of the work to be subcontracted, having adequate technical knowledge, ability and capacity to perform such work and having at least three years experience in the performance of similar work and of equal magnitude to the work to be subcontracted. If any proposed subcontractor(s) is (are) not qualified in the opinion of EGAT, the Bidder is required to select other subcontractor(s) at his own cost to the satisfaction of EGAT.

Definitions:

Complete substation: New substation or Extension of the existing substation which comprise of at least one transformer circuit and one line circuit.

All above scope may not be necessary to include the building construction and the civil works by themselves. However, the design, supervision, and execution of the buildings and the civil works shall be required.

Year(s) of operation/use: The period of operation Completion date or Commissioning date or Taking over date or Operation date or Put in service date stated in End User Certificate or the sufficient documentary evidence before bid opening.

A-5. Joint Venture or Consortium

In the event that the successful Bidder is a joint venture or a consortium formed of two or more companies, EGAT requires that the parties to the joint venture or the consortium accept joint and several liability for all obligations under the Contract.

A-6. Preparation and Delivery of Bids

Bids shall be prepared in accordance with the Instructions to Bidders contained in the Bidding Documents in one (1) original and three (3) hard copies, in English, on the bid forms included for this purpose and shall be accompanied with a bid security as required under the Article pertaining to Bid Security in Section B: Instructions to Bidders. The bid security in accordance with Article B-3. Bid Security shall be submitted in a separate sealed envelope.

The envelope of the bids will be marked in capital letters in the lower left-hand corner as follows :

INVITATION TO BID NO. TS12-S-24
SUPPLY AND CONSTRUCTION FOR EXPANSION OF 115 kV
NONG BUA RAWE (GIS) AND 115 kV SIKHIU 2 SUBSTATIONS
TRANSMISSION SYSTEM EXPANSION PROJECT NO.12

and shall be addressed and delivered to :

International Procurement Department - Transmission Segment
Procurement and Inventory Management Division
Electricity Generating Authority of Thailand
Bangkruai, Nonthaburi 11130
Thailand

on or before 10:00 a.m., Bangkok Standard Time, see Tentative Schedule.....

If the envelope(s) is not sealed, marked and addressed as required above, EGAT will assume no responsibility for the bid misplacement or premature opening.

Bids will be opened publicly at ***Bidding Room, 1st floor, Tor 082 Building*** and at the time specified above.

Bids received after the time stipulated above shall be rejected and returned unopened.

A-7. Availability of Bidding Documents

The Bidding Documents in CD-ROM are available for examination and can be obtained from EGAT at the hereunder address upon payment to EGAT, non-refundable, in the amount of USD 35.- or Baht 1,000.-; these prices include the value added tax.

International Procurement Department - Transmission Segment Procurement
and Inventory Management Division
Electricity Generating Authority of Thailand
Bangkruai, Nonthaburi 11130
Thailand

Note : At the time of bidding, EGAT's Specifications and all Drawings need not be submitted, although they are considered as part of the Bidding Documents.

EGAT ACCEPTED MAIN RELAY LIST No.1

Description	Manufacturer	Accepted Type	Accepted Voltage Level			Notes
			500 kV	230 kV	115&69 kV	
Current Differential Protection	ABB	RED670 (*)	✓	✓	✓	
	GE	P543 (**)	✓	✓	✓	
		L90 (*)	✓	✓	✓	
	SEL	SEL-311L	✓	✓	✓	
		SEL-411L (*)	✓	✓	✓	
	Siemens	7SD52 (**)	✓	✓	✓	
	Schneider Electric	P543 (*)	✓	✓	✓	
	Ingeteam	EF-LD (*)	✓	✓	✓	
NR Electric	PCS-931 (*)	✓	✓	✓		
Distance Protection	ABB	REL670 (*)	✓	✓	✓	
	GE	P443 (*)	✓	✓	✓	
		D30			✓	Only for three-pole tripping and line protection without carrier scheme.
		D60 (*)		✓	✓	
		ALPSDA1	✓	✓	✓	
	SEL	SEL-311C			✓	Only for three-pole tripping and line protection without carrier scheme.
		SEL-421 (*)	✓	✓	✓	
		SEL-411L (*)	✓	✓	✓	
	Siemens	7SA522 (**)	✓	✓	✓	
		7SA6 series (**)	✓	✓	✓	
7SA87 (*)		✓	✓	✓		

เอกสารควบคุม

รับรองสำเนาโดย ทพอ.ส.กส.ส.จ.ว.ส.
ก่อนนำไปใช้งาน
ต้องตรวจสอบ Revision ล่าสุด
ฝ่ายวิศวกรรมระบบส่ง กฟผ.

12 Jan 2023

EGAT ACCEPTED MAIN RELAY LIST No.1

Description	Manufacturer	Accepted Type	Accepted Voltage Level			Notes
			500 kV	230 kV	115&69 kV	
Distance Protection	Schneider Electric	P443 (*)	✓	✓	✓	
	Ingeteam	EF-ZT (*)	✓	✓	✓	
	NR Electric	PCS-902 (*)	✓	✓	✓	
	Toshiba	GRZ200 (*)		✓	✓	
	ZIV	ZLV		✓	✓	
Transformer Differential Protection	ABB	RET670 (*)	✓	✓	✓	
		RET650 (**)	✓	✓	✓	3-restraints
	GE	P64x (*)	✓	✓	✓	Only P643, P645
		T35		✓	✓	
		T60 (*)		✓	✓	
	SEL	SEL-387		✓	✓	4-restraints
		SEL-487E (*)	✓	✓	✓	
		SEL-587			✓	2-restraints
		SEL-787 (**)			✓	4-restraints
	Siemens	Duobias (**)		✓	✓	
		7UT6 (**)	✓	✓	✓	5-restraints
		7UT82 (*)	✓	✓	✓	2-restraints
		7UT86 (*)	✓	✓	✓	3-restraints
	Schneider Electric	P645 (*)	✓	✓	✓	
	Ingeteam	EF-TD (*)	✓	✓	✓	3-restraints
NR Electric	PCS-978 (*)	✓	✓	✓		

Bid No.

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 ต้องตรวจสอบ Revision ล่าสุด
 ฝ่ายวิศวกรรมระบบส่ง กฟผ.

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12 Jan 2023

EGAT ACCEPTED MAIN RELAY LIST No.1

Description	Manufacturer	Accepted Type	Accepted Voltage Level			Notes
			500 kV	230 kV	115&69 kV	
Transformer	Toshiba	GRT200 (*)	✓	✓	✓	
Differential Protection	ZIV	IDV	✓	✓	✓	
	Mitsubishi	MRD-HA (**)			✓	3-restraints
High Impedance	ABB	REB650 (**)	✓	✓	✓	
Busbar Protection	SEL	SEL-587Z	✓	✓	✓	
Low Impedance Busbar Protection	ABB	REB670 (*)	✓	✓	✓	
		REB500	✓	✓	✓	
	GE	P746	✓	✓	✓	
		P740 (*)	✓	✓	✓	
		P747	✓	✓	✓	
		B90 (**)	✓	✓	✓	
		B30	✓	✓	✓	Only for breaker and a half, double bus double breaker or main and transfer bus arrangement.
	SEL	SEL-487B (*)	✓	✓	✓	
	Siemens	7SS52 (**)	✓	✓	✓	
		7SS60	✓	✓	✓	Only for breaker and a half, double bus double breaker or main and transfer bus arrangement.
		7SS85 (*)	✓	✓	✓	
	Schneider Electric	P746 (*)	✓	✓	✓	
		P740 (**)	✓	✓	✓	
	Toshiba	GRB200 (*)	✓	✓	✓	
	Mitsubishi	MBP-H1A (**)		✓	✓	In case of double bus single breaker arrangement, maximum 8 feeders with 1 bus coupler and 2 bus sections are allowed.

เอกสารควบคุม

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12 Jan 2023

EGAT ACCEPTED MAIN RELAY LIST No.1

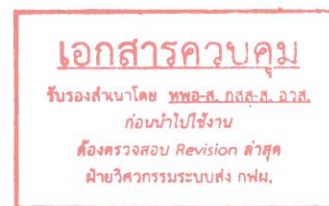
Description	Manufacturer	Accepted Type	Accepted Voltage Level			Notes
			500 kV	230 kV	115&69 kV	
Breaker Failure Protection	ABB	REQ650 (**)			✓	
	GE	P141 (**)			✓	Only for 3-phase breaker failure function.
		P14Nx	✓	✓	✓	
		C60		✓	✓	
		F60		✓	✓	
		SEL	SEL-501			✓
	Siemens	7VK6 series (**)	✓	✓	✓	
		7SJ82 (*)			✓	Only for 3-phase breaker failure function.
	Schneider Electric	P821		✓	✓	Only firmware version 1.F is accepted.
	Ingeteam	EF-ZT (*)	✓	✓	✓	
	NR Electric	PCS-9611 (*)			✓	Only for 3-phase breaker failure function.
	Toshiba	GRD200 (*)	✓	✓	✓	
ZIV	IRL			✓	Only for 3-phase breaker failure function.	

Remarks

- (*) Applicable to IEC 61850 for both station bus and process bus with the certification issued by the third party laboratory and specifying that the said relay conforms to "IEC 61850 edition 2 parts 6, 7-1, 7-2, 7-3, 7-4, and 8-1".
- (**) Applicable to IEC 61850 only for station bus with the certification issued by the third party laboratory and specifying that the said relay conforms to "IEC 61850 edition 2 parts 6, 7-1, 7-2, 7-3, 7-4, and 8-1".

Notes

1. The procedures for being listed in EGAT ACCEPTED MAIN RELAY LIST are specified in the EGAT's Pre-Qualification (PQ) process, of which the details can be provided by Transmission System Engineering Division on request.
2. If any types of relay in the list are planned to discontinue the manufacturing, the manufacturer or the representative is responsible for informing EGAT at least 1 year before the unavailable date.
3. The relays shall be configured to comply with all EGAT's required functions.



12 Jan 2023

EGAT ACCEPTED MAIN RELAY LIST No.2

Description	Manufacturer	Accepted Type	Accepted Voltage Level				Notes
			500 kV	230 kV	115&69 kV	33&22 kV	
Directional Overcurrent Relay	ABB	REQ650 (**)	✓	✓	✓	✓	
	GE	P14Dx (**)	✓	✓	✓	✓	
		P841	✓	✓	✓	✓	
		P143 (**)	✓	✓	✓	✓	
	SEL	SEL-351A	✓	✓	✓	✓	
		SEL-451 (*)	✓	✓	✓	✓	
		SEL-751 (**)	✓	✓	✓	✓	
	Siemens	7SJ62 (**)	✓	✓	✓	✓	
		7SJ85 (*)	✓	✓	✓	✓	
		7SJ82 (*)	✓	✓	✓	✓	
	Schneider Electric	P141 (**)	✓	✓	✓	✓	
		P143 (**)	✓	✓	✓	✓	
	Ingeteam	EF-MD (*)	✓	✓	✓	✓	
		DA-PT (**)	✓	✓	✓	✓	
	NR Electric	PCS-9611 (*)				✓	None of line fault locator. Only use with feeder.
	Toshiba	GRE140	✓	✓	✓	✓	
GRD200 (*)		✓	✓	✓	✓		
ZIV	IRV		✓	✓	✓		

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12 Jan 2023

EGAT ACCEPTED MAIN RELAY LIST No.2

Description	Manufacturer	Accepted Type	Accepted Voltage Level				Notes
			500 kV	230 kV	115&69 kV	33&22 kV	
Overcurrent Relay	ABB	REQ650 (**)	✓	✓	✓	✓	
	GE	P141 (**)	✓	✓	✓	✓	
		P14Dx (**)	✓	✓	✓	✓	
		P14Nx	✓	✓	✓	✓	
		P841	✓	✓	✓	✓	
		F60	✓	✓	✓	✓	
		GE	F650 (**)	✓	✓	✓	✓
	SR350		✓	✓	✓	✓	
	P143 (**)		✓	✓	✓	✓	
	SEL	SEL-351A	✓	✓	✓	✓	
		SEL-451 (*)	✓	✓	✓	✓	
		SEL-551	✓	✓	✓	✓	
		SEL-751 (**)	✓	✓	✓	✓	
		SEL-751A	✓	✓	✓	✓	
	Siemens	7SJ61 (**)	✓	✓	✓	✓	
		7SJ62 (**)	✓	✓	✓	✓	
		7SJ85 (*)	✓	✓	✓	✓	
		7SJ82 (*)	✓	✓	✓	✓	

BIONO.TS12-S-24

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EGAT ACCEPTED MAIN RELAY LIST No.2

Description	Manufacturer	Accepted Type	Accepted Voltage Level				Notes
			500 kV	230 kV	115&69 kV	33&22 kV	
Overcurrent Relay	Schneider Electric	P120	✓	✓	✓	✓	
		P122	✓	✓	✓	✓	
		P141 (**)	✓	✓	✓	✓	
		P143 (**)	✓	✓	✓	✓	
	Ingeteam	EF-MD (*)	✓	✓	✓	✓	
		DA-PT (**)	✓	✓	✓	✓	
	NR Electric	PCS-9611 (*)			✓	✓	Only for three-pole tripping.
	Toshiba	GRE140	✓	✓	✓	✓	
		GRD200 (*)	✓	✓	✓	✓	
	ZIV	IRV		✓	✓	✓	
IRL		✓	✓	✓	✓		
Synchronism Check Relay	ABB	REQ650 (**)	✓	✓	✓		Only product version 2.1 is accepted.
	GE	P841	✓	✓	✓		
		F60	✓	✓	✓		
		F650 (**)	✓	✓	✓		
	SEL	SEL-351A	✓	✓	✓		
		SEL-451 (*)	✓	✓	✓		
		SEL-751 (**)	✓	✓	✓		
SEL-751A		✓	✓	✓			

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EGAT ACCEPTED MAIN RELAY LIST No.2

Description	Manufacturer	Accepted Type	Accepted Voltage Level				Notes
			500 kV	230 kV	115&69 kV	33&22 kV	
Synchronism Check Relay	Siemens	7VK61 (**)	✓	✓	✓		
		7SJ85 (*)	✓	✓	✓		
		7SJ82 (*)	✓	✓	✓		
	Ingeteam	EF-MD (*)	✓	✓	✓		
		DA-PT (**)	✓	✓	✓		
	NR Electric	PCS-9611 (*)	✓	✓	✓		
	Toshiba	GRD200 (*)	✓	✓	✓		
Auto Reclosing Relay	ABB	REQ650 (**)	✓	✓	✓		
	GE	P841	✓	✓	✓		
		F60			✓		Only for three-pole reclose
		F650 (**)			✓		Only for three-pole reclose
		DRS			✓		Only for three-pole reclose
	SEL	SEL-351A			✓		Only for three-pole reclose
		SEL-451 (*)			✓		Only for three-pole reclose
		SEL-751 (**)			✓		Only for three-pole reclose
	Siemens	7VK61 (**)	✓	✓	✓		
		7SJ82 (*)			✓		Only for three-pole reclose
	Ingeteam	EF-ZT (*)	✓	✓	✓		
	NR Electric	PCS-9611 (*)			✓		Only for three-pole reclose
	Toshiba	GRD200 (*)	✓	✓	✓		
Overfluxing Relay	Ingeteam	EF-TD (*)	✓	✓	✓		

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 12 Jan 2023



EGAT ACCEPTED MAIN RELAY LIST No.2

Description	Manufacturer	Accepted Type	Accepted Voltage Level				Notes
			500 kV	230 kV	115&69 kV	33&22 kV	
Frequency Relay	GE	P94Vx	✓	✓	✓	✓	
		MIV		✓	✓	✓	
	SEL	SEL-351A	✓	✓	✓	✓	
		SEL-451 (*)	✓	✓	✓	✓	
		SEL-751 (**)	✓	✓	✓	✓	
		SEL-751A	✓	✓	✓	✓	
	Siemens	7SJ85 (*)	✓	✓	✓	✓	
		7SJ82 (*)	✓	✓	✓	✓	
	Ingeteam	EF-MD (*)	✓	✓	✓	✓	
		DA-PT (**)	✓	✓	✓	✓	
	NR Electric	PCS-9611 (*)	✓	✓	✓	✓	
	ZIV	IRL	✓	✓	✓	✓	
Under/Overvoltage Relay	GE	MIV		✓	✓	✓	None of VT input (open delta connection) for 59N.
		P94V	✓	✓	✓	✓	
	SEL	SEL-351A	✓	✓	✓	✓	
		SEL-751 (**)	✓	✓	✓	✓	
		SEL-751A	✓	✓	✓	✓	
	Siemens	7SJ62 (**)	✓	✓	✓	✓	
		7SJ85 (*)	✓	✓	✓	✓	
		7SJ82 (*)	✓	✓	✓	✓	
	Schneider Electric	P141 (**)	✓	✓	✓	✓	

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EGAT ACCEPTED MAIN RELAY LIST No.2

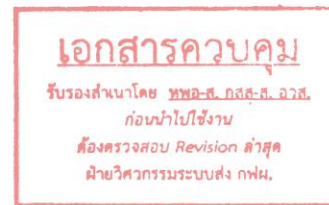
Description	Manufacturer	Accepted Type	Accepted Voltage Level				Notes
			500 kV	230 kV	115&69 kV	33&22 kV	
Under/Overvoltage Relay	Schneider Electric	P143 (**)	✓	✓	✓	✓	
	Ingeteam	EF-MD (*)	✓	✓	✓	✓	
		DA-PT (**)	✓	✓	✓	✓	
	NR Electric	PCS-9611 (*)		✓	✓	✓	Only for C-bank protection.
	Toshiba	GRD200 (*)	✓	✓	✓	✓	
	ZIV	IRV	✓	✓	✓	✓	

Remarks

- (*) Applicable to IEC 61850 for both station bus and process bus with the certification issued by the third party laboratory and specifying that the said relay conforms to "IEC 61850 edition 2 parts 6, 7-1, 7-2, 7-3, 7-4, and 8-1".
- (**) Applicable to IEC 61850 only for station bus with the certification issued by the third party laboratory and specifying that the said relay conforms to "IEC 61850 edition 2 parts 6, 7-1, 7-2, 7-3, 7-4, and 8-1".

Notes

1. The procedures for being listed in EGAT ACCEPTED MAIN RELAY LIST are specified in the EGAT's Pre-Qualification (PQ) process, of which the details can be provided by Transmission System Engineering Division on request.
2. If any types of relay in the list are planned to discontinue the manufacturing, the manufacturer or the representative is responsible for informing EGAT at least 1 year before the unavailable date.
3. The relays shall be configured to comply with all EGAT's required functions.



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EGAT ACCEPTED FAULT RECORDING SYSTEM LIST

Accepted Type	Manufacturer
IDM+	Qualitrol
M871	GE
7KE85 (*)	Siemens
TESLA 4000 (*)	ERL Phase
TR 2100	Rochester (RIS)
TR 3000 (**)	

Remarks

- (*) Applicable to IEC 61850 for both station bus and process bus with the certification issued by the third party laboratory and specifying that the said FRS conforms to "IEC 61850 edition 2 parts 6, 7-1, 7-2, 7-3, 7-4, and 8-1".
- (**) Applicable to IEC 61850 only for station bus with the certification issued by the third party laboratory and specifying that the said FRS conforms to "IEC 61850 edition 2 parts 6, 7-1, 7-2, 7-3, 7-4, and 8-1".

Notes

1. The procedures for being listed in EGAT ACCEPTED FAULT RECORDING SYSTEM LIST are specified in the EGAT's Pre-Qualification (PQ) process, of which the details can be provided by Transmission System Engineering Division on request.
2. If any types of FRS in the list are planned to discontinue the manufacturing, the manufacturer or the representative is responsible for informing EGAT at least 1 year before the unavailable date.

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EGAT ACCEPTED MANUFACTURER LIST FOR PROTECTIVE RELAY

Description	Manufacturer / Country
Protective Relay	ABB / Sweden, Switzerland, USA
	GE / USA, Canada, Spain, UK
	SEL / USA
	Siemens / Germany, UK
	Toshiba / Japan, Vietnam
	Schneider Electric / France, UK
	ZIV / Spain
	INGETEAM / Spain
	NR Electric / China
	Mitsubishi / Japan
	Protecta / Hungary
	Arcteq / Finland

Bid No.

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EGAT ACCEPTED MANUFACTURER LIST FOR FAULT RECORDING SYSTEM

Description	Manufacturer / Country
Fault Recording System	Qualitrol / UK
	Siemens / Germany
	Rochester / USA
	GE / USA
	ERL Phase / Canada

Bid No. TS12-S-24

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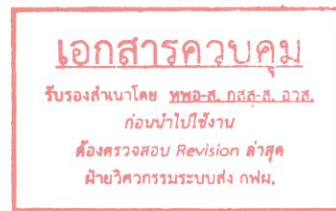
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EGAT ACCEPTED MANUFACTURER LIST FOR
CONTROL AND PROTECTION PANEL (LOCAL MANUFACTURER)

Description	Manufacturer	Designed by
500 kV Control and Protection Panel	Hitachi Energy (Thailand) Limited	Hitachi Energy (Thailand) Limited
	Precise System and Project Co., Ltd.	Precise System and Project Co., Ltd.
	U-tah Industry Limited Partnership	U-tah Industry Limited Partnership
	SCI Electric Public Company Limited	Siemens Limited
230 kV and below Control and Protection Panel	Hitachi Energy (Thailand) Limited	Hitachi Energy (Thailand) Limited
	C&T Metal Products Co., Ltd.	Easun Reyrolle Limited, India
	Precise System and Project Co., Ltd.	Precise System and Project Co., Ltd.
	U-tah Industry Limited Partnership	U-tah Industry Limited Partnership
	SCI Electric Public Company Limited	SCI Electric Public Company Limited
	Timpano Electrical Co., Ltd.	Timpano Electrical Co., Ltd.
	Mantra Switchgear Co., Ltd.	Siemens Limited

Notes

- The procedures for being listed in EGAT ACCEPTED MANUFACTURER LIST FOR CONTROL AND PROTECTION PANEL (LOCAL MANUFACTURER) can be provided by Transmission System Planning and Project Division on request.
- The control and protection panel shall be manufactured and designed by the manufacturer/company written in the same row.



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SECTION H
SCOPE OF WORK

SCOPE OF WORK

H-1. General

<u>No.</u>	<u>Substation</u>	<u>Page</u>
1.	115 KV NONG BUA RAWE SUBSTATION (GIS)	
	- GENERAL	H1-1
	- ELECTRICAL PART	H1A-1
	- CONTROL AND PROTECTION PART	H1B-1
	- COMMUNICATION PART (NONE)	-
	- CIVIL AND ARCHITECTURAL PART	H1D-1
2.	115 KV SIKHIU 2 SUBSTATION	
	- GENERAL	H2-1
	- ELECTRICAL PART	H2A-1
	- CONTROL AND PROTECTION PART	H2B-1
	- COMMUNICATION PART (NONE)	-
	- CIVIL AND ARCHITECTURAL PART	H2D-1

1. 115 KV NONG BUA RAWE SUBSTATION (GIS)

GENERAL

Nong Bua Rawe substation is located at Nong Bua Rawe district, Chaiyaphum province. The Nong Bua Rawe Substation is GIS substation with double bus single breaker scheme. The existing 115 kV substation shall be extended as outlined in the drawings to accommodate new 115 kV transmission lines as follows:

- The 115 kV Line No.1 to PEA

The Contractor shall furnish a complete supply of equipment, materials and installation work etc., which is necessary to complete construction substation on a supply and construction basis, in accordance with the Contract Documents.

The Contractor shall supply equipment, perform construction and installation work necessary for completion of operation substation in accordance with the Contract Documents. The design work shall include, but not limited to, technical calculation, preparation of drawings, bill of materials for installation and construction work. For accomplishment of complete operational substation, Scope of Contractor's work shall include connection to all public utilities i.e. electrical power, water and drainage. Testing and commissioning of all equipment required to make the substation function properly.

Besides, all detailed engineering design work, calculations, drawing preparation, submission of backup data, test reports instruction books (and), etc. shall be included.

- 1) As stated elsewhere in this bidding documents, the drawings included in the bidding documents except drawing mark "For Construction" are for bidding purposes only and shall not be used for execution of the work.
- 2) The submitted drawings which are incomplete/unacceptable, or are the bidding document copies with minor modifications shall be returned unmarked to the Contractor.
- 3) The drawings shall be furnished which provide all details required for thoroughly described equipment as well as installation methods and requirements. However, EGAT retains the right to request additional details if those furnished are perceived inadequate.
- 4) Calculations, backup data and documentation are required for all parts of the design. The furnished data shall verify completely that design is adequate for application purpose.

ELECTRICAL PART

Work included in this Contract.

The Work included in this Contract to be performed by the Contractor shall be as specified in the Contract Documents and as follows:

1. 115 kV Gas Insulated Substation (GIS)

- 1.1 Installation of GIS equipment required for a complete 115 kV GIS Substation. (GIS equipment supply by EGAT)
- 1.2 Design, supply, and installation of the required equipment and related accessories for additional 115 kV line No.1 to PEA added in the new bay (Bay No.1) as shown in the drawings.
- 1.3 Design, supply, and installation of miscellaneous hardware for complete 115 kV substation.

2. Grounding system

- 2.1 Design, supply, and installation of the grounding system of the following:
 - 115 kV GIS substation.

The grounding conductor for the substation grounding system shall be of the 4/0 AWG bare copper wire type.
- 2.2 Design, supply, and installation of the grounding equipment and miscellaneous hardware for the 115 kV GIS substation.
- 2.3 The contractor shall design, supply and install the conductor size 2 x 4/0 AWG bare copper wire type connect from ground grid to steel structure and equipment.

3. Lightning protection

- 3.1 Design, supply, and installation of the substation lightning protection system completed with all related equipment including lightning protection wires or masts. This includes proper system insulation coordination, overhead ground wire, and surge arresters. The Contractor shall design the lightning protection system for the protection of all substation equipment which is under the protective zone. To meet EGAT's design criteria for the lightning protection system and to enhance the stability of lightning protection system, the following values shall be used in the design:
 - BIL of 550 kV for 115 kV substation
- 3.2 Lightning protection system shall be designed to meet IEC, NEMA and E.I.T. standards or internationally-accepted standards

4. Facility system

4.1 Outdoor facility system:

4.1.1 Design, supply, and installation of a switchyard lighting system complete with all integral accessories to provide a complete system operation. The lighting system shall mainly consist of equipment lighting, terminal boxes, and wiring cables for lighting circuits.

4.1.2 The lamps for outdoor facility lighting system shall be LED type with all integral accessories, e.g. lamp holders, fixtures, reflectors, and etc. The Contractor shall provide drawings that show details for installation.

4.2 The size of low voltage cable shall be according to the design drawings.

5. Other works

5.1 Supply and installation the identification plates for 115 kV Line No.1 to PEA as shown in the drawings.

6. Testing and commissioning

6.1 Testing and commissioning of all equipment required to make the substation function properly.

Work not included in this Contract

The Work not included in this Contract shall be as shown on the drawings and as follows:

1. The stringing work from the 115 kV substation take-off structures (EGAT) to PEA.
2. Supply of suspension insulators and post insulators.

CONTROL AND PROTECTION PART

Work included in this Contract

1. Design, supply, installation, wiring, test and commissioning of the complete control and protection system which comprises the following equipment:
 - Swing rack type protective relay switchboard.
 - Metering panel.
 - Loose equipment as specification in the Price Schedules.
 - Cable and accessories as well as connection of cables among all the new panels, the existing panels and the associated equipment in order to complete the function of the control and protection system.
2. Design, Modification, installation, wiring, test and commissioning of the complete control and protection system which comprises the following equipment such as:
 - Swing rack type Bus protection panel.
 - Swing rack protection panel.
 - Metering panel.
 - Transducer panel.
 - Interposing relay panels.
 - Marshalling panels for the control system.
 - Marshalling panels for the remote terminal unit.
 - Marshalling panels for the fault recording system.
 - Marshalling panels for the teleprotection interface.
 - 400/230 VAC, 125 VDC power panel and distribution boards.
 - Interface the new equipment to the existing GPS and Ethernet switch system as well as control and protection system.
3. Design of both schematic and wiring diagrams as well as wiring of the additional inputs and outputs to the existing Computerized Control System (CCS), including test and commissioning of the completed CCS.
4. Design of both schematic and wiring diagrams as well as wiring of the additional inputs to the existing Fault Recording System (FRS), including test and commissioning of the completed FRS. The existing FRS model is ROCHESTER.
5. The Contractor shall be responsible for providing complete schematic and wiring diagrams of the control and protection system including ACAD files of the said drawings.
6. Any modification and interfacing work to the existing control, metering and protection panels including supply of related accessory equipment which is required for incorporating the new equipment, the modified existing drawings shall be performed

by the Contractor and submitted to EGAT for approval. In addition, the ACAD files of the final drawings shall be submitted.

7. For removal of the unused existing cables. The removed cables shall be neatly reeled and kept in a suitable place recommended by EGAT.
8. The Contractor shall provide the draftsman working at site during the commissioning stage in order to be in charge of writing the As-built Drawings of Control and Protection System.

CIVIL AND ARCHITECTURAL PART

Work included in this Contract.

CIVIL WORK

1. Design and construction of
 - 1.1 Steel structure for Specified equipment and the others not shown in “For Construction drawings” and / or EGAT’s specification.
2. Construction of
 - 2.1 Steel structure foundation.
 - 2.2 Take-off foundation.
 - 2.3 Equipment structure foundation with sub trench (if required).
 - 2.4 Cable trench.
 - 2.5 Site office.
3. All design works and the fabrication drawings for all steel structures shall be submitted to EGAT for approval.
4. All design, construction and testing shall be in accordance with Specification No.3001: Civil and Architectural Work.
5. EGAT’s Soil Investigation Report (attached to the Contract) is a document that can be a reference for design, however; the review of the soil investigation report shall be under responsibility of the Contractor and the warranty of work shall remain following all obligations as specified in the Contract.
6. The Contract price shall be adjusted (added or reduced) in case that the soil investigation results to be used for the design works is different from the layout and standard drawings.
7. Dynamic load test (DLT) according to ASTM D4945-89 shall be applied to at least 2% of driven piles (if driven pile type is required) except for driven pile of fence and lamp post.
8. The Contractor shall remove all debris from construction material and other works in order to make the site clean and be in the condition acceptable to EGAT.
9. According to the Contract Document Section G-3: Contractor’s Office and Other Construction Facilities; the detail in paragraph 3 shall be changed as follows: the Contractor shall provide for EGAT an office container at the site during construction with a minimum space of 24 sq.m. which shall be air-conditioned and 4 sq.m for toilet.

2. 115 KV SIKHIU 2 SUBSTATION

GENERAL

Sikhiu 2 Substation is located at Tambon Makluea Kao, Sung Noen District, Nakhon Ratchasima Province. The Sikhiu 2 Substation is AIS substation with Breaker and a Half bus scheme. The existing 230/115 kV substation shall be extended as outlined in the drawings to accommodate new 115 kV transmission lines as follows:

- The 115 kV Line No.3 to PEA

The Contractor shall furnish a complete supply of equipment, materials and installation work etc., which is necessary to complete construction substation on a supply and construction basis, in accordance with the Contract Documents.

The Contractor shall supply equipment, perform construction and installation work necessary for completion of operation substation in accordance with the Contract Documents. The design work shall include, but not limited to, technical calculation, preparation of drawings, bill of materials for installation and construction work. For accomplishment of complete operational substation, Scope of Contractor's work shall include connection to all public utilities i.e. electrical power, water and drainage. Testing and commissioning of all equipment required to make the substation function properly.

Besides, all detailed engineering design work, calculations, drawing preparation, submission of backup data, test reports instruction books (and), etc. shall be included.

- 1) As stated elsewhere in this bidding documents, the drawings included in the bidding documents except drawing mark "For Construction" are for bidding purposes only and shall not be used for execution of the work.
- 2) The submitted drawings which are incomplete/unacceptable, or are the bidding document copies with minor modifications shall be returned unmarked to the Contractor.
- 3) The drawings shall be furnished which provide all details required for thoroughly described equipment as well as installation methods and requirements. However, EGAT retains the right to request additional details if those furnished are perceived inadequate.
- 4) Calculations, backup data and documentation are required for all parts of the design. The furnished data shall verify completely that design is adequate for application purpose.

ELECTRICAL PART

Work included in this Contract.

The Work included in this Contract to be performed by the Contractor shall be as specified in the Contract Documents and as follows:

1. 115 kV Conventional Substation (AIS)

- 1.1 Design, supply, and installation of equipment required for a complete 115 kV Substation.
- 1.2 Design, supply, and installation of the required equipment and related accessories for additional 115 kV line No.3 to PEA which be added in the new bays (Bay No.2) as shown in the drawings.
- 1.3 Design, supply, and installation of miscellaneous hardware for complete 115 kV substation.

2. Grounding system

- 2.1 Design, supply, and installation of the grounding system of the following:
 - 115 kV Conventional substation.

The grounding conductor for the substation grounding system shall be of the 4/0 AWG bare copper wire type.
- 2.2 Design, supply, and installation of the grounding equipment and miscellaneous hardware for the 115 kV conventional substation.
- 2.3 The contractor shall design, supply, and install the conductor size 2 x 4/0 AWG bare copper wire type connect from ground grid to steel structure and equipment.

3. Lightning protection

- 3.1 Design, supply, and installation of the substation lightning protection system completed with all related equipment including lightning protection wires or masts. This includes proper system insulation coordination, overhead ground wire, and surge arresters. The Contractor shall design the lightning protection system for the protection of all substation equipment which is under the protective zone. To meet EGAT's design criteria for the lightning protection system and to enhance the stability of lightning protection system, the following values shall be used in the design:
 - BIL of 550 kV for 115 kV substation
- 3.2 Lightning protection system shall be designed to meet IEC, NEMA and E.I.T. standards or internationally-accepted standards

4. Facility system

- 4.1 Outdoor facility system:
 - 4.1.1 Design, supply, and installation of a switchyard lighting system complete with all integral accessories to provide a complete system operation. The lighting system shall mainly consist of equipment lighting, terminal boxes, and wiring cables for lighting circuits.
 - 4.1.2 The lamps for outdoor facility lighting system shall be LED type with all integral accessories, e.g. lamp holders, fixtures, reflectors, and etc. The Contractor shall provide drawings that show details for installation.
- 4.2 The size of low voltage cable shall be according to the design drawings.
- 4.3 The voltage drop shall conform to EGAT's requirement and the calculation shall be submitted for approval.

5. Other works

- 5.1 The sag and tension of phase wires and overhead ground wires shall be calculated and designed according to internationally-accepted standards by the Contractor and the said calculation shall be submitted to EGAT for approval.
- 5.2 Design, supply, and installation of all hardware for suspension and post insulator assembly.
- 5.3 Supply and installation the identification plates for 115 kV Line No.3 to PEA as shown in the drawings.

6. Testing and commissioning

- 6.1 Testing and commissioning of all equipment required to make the substation function properly.

Work not included in this Contract

The Work not included in this Contract shall be as shown on the drawings and as follows:

- 1. The stringing work from the 115 kV substation take-off structures (EGAT) to PEA.
- 2. Supply of suspension insulators and post insulators.

CONTROL AND PROTECTION PART

Work included in this Contract

1. Design, supply, installation, wiring, test and commissioning of the complete control and protection system which comprises the following equipment:
 - Swing rack type protective relay switchboard.
 - Fault Recording System.
 - Loose equipment as specified in the Price Schedules.
 - Cable and accessories as well as connection of cables among all the new panels, the existing panels and the associated equipment in order to complete the function of the control and protection system.
2. Design, modification, installation, wiring, test and commissioning to complete the control and protection system of the existing panels which comprises at least the following equipment:
 - Swing rack type Bus No.1 and Bus No.2 protection panel.
 - Swing rack protection panel.
 - Transducer panel.
 - Metering panel.
 - Interposing relay panels.
 - Marshalling panel for the control system.
 - Marshalling panel for the remote terminal unit.
 - Marshalling panel for the fault recording system.
 - Marshalling panel for the teleprotection interface.
 - GPS receiver panel supplied by EGAT.
 - 400/230 VAC distribution board.
 - 125 VDC distribution board.
 - Interface the new equipment to the existing control and protection system.
3. Design, modification of the schematic and wiring diagram of the additional and replacement inputs to the existing EGAT RTU, including test and commissioning of the complete EGAT RTU. Providing completed EGAT RTU I/O List in both hardcopy and electronic file.
4. Any modification and interfacing works to the existing primary equipment, metering, control and protection panels, including supply of related accessory equipment which is required for incorporating the new equipment, including the modified existing drawings shall be performed by the Contractor and submitted to EGAT for approval. In addition the final drawings shall be submitted as ACAD files.

5. The Contractor shall be responsible for providing complete schematics and wiring diagrams of the control and protection system.
6. For removal of the unused existing cables. The removed cables shall be neatly reeled and kept in a suitable place recommended by EGAT.
7. The Contractor shall provide the draftsman working at site during the commissioning stage in order to be in charge of writing the As-built Drawings of Control and Protection System.

CIVIL AND ARCHITECTURAL PART

Work included in this Contract.

CIVIL WORK

1. Design and Construction of
 - 1.1 Steel structure for Specified equipment and the others not shown in “For Construction drawings” and / or EGAT’s specification.
2. Construction of
 - 2.1 Steel structure foundation.
 - 2.2 Take-off foundation.
 - 2.3 Equipment structure foundation with sub trench (if required).
 - 2.4 Cable trench.
 - 2.5 Site office.
3. All design works and the fabrication drawings for all steel structures shall be submitted to EGAT for approval.
4. All design, construction and testing shall be in accordance with Specification No.3001: Civil and Architectural Work.
5. Seismic load test (sonic integrity test) according to ASTM D5882-96 shall be applied to all bored piles (if bored pile type is required).
6. The Contractor shall remove all debris from construction material and other works in order to make the site clean and be in the condition acceptable to EGAT.
7. According to the Contract Document Section G-3: Contractor’s Office and Other Construction Facilities; the detail in paragraph 3 shall be changed as follows: the Contractor shall provide for EGAT an office container at the site during construction with a minimum space of 24 sq.m. for site office and 4 sq.m. for toilet.