

Republic of the Philippines
DEPARTMENT OF NATIONAL DEFENSE
GOVERNMENT ARSENAL
Camp General Antonio Luna
Lima, Bataan

APRIL 13, 2023

DWG. NO: CMS 2023-002

ELECTRICAL WORKS AT CBD ANNEALING MACHINE

LOCATION: CBD ANNEALING AREA

END USER: CASE AND BULLET DIVISION (CBD)

ESTIMATED PROJECT COST: Php 9,191,000.00

ATTACHMENT:

1. PROGRAM OF WORKS:

ARTICLE I: STATEMENT OF WORK
ARTICLE II: SCOPE OF WORKS
ARTICLE III: SPECIFICATIONS
ARTICLE IV: COMPLETION

2. BILL OF QUANTITIES

3. DETAILED ESTIMATE

4. APPROVED BUDGET FOR CONTRACT (ABC)

5. WORKING DRAWINGS

Republic of the Philippines
DEPARTMENT OF NATIONAL DEFENSE
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Camp General Antonio Luna
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ELECTRICAL WORKS AT CBD ANNEALING MACHINE

ARTICLE I – STATEMENT OF WORK

- A. The work covered by this specification consists of the supply of labor, materials, consumables, tools/instruments, equipment, supervision and other services required to complete the ELECTRICAL WORKS AT CBD ANNEALING MACHINE project, all in accordance with Articles I, II, III and IV of this Job Specification.
- B. The work shall be undertaken at Government Arsenal, Camp General Antonio Luna, Lamao, Lima, Bataan.

ARTICLE II – SCOPE OF WORK

- A. The scope of work for this Job Specification and Contract Agreement encompasses all effort necessary to complete the construction and commissioning of facilities for the ELECTRICAL WORKS AT CBD ANNEALING MACHINE project. The Contractor shall provide all materials and consumables, labor, tools/instruments, equipment, supervision and other services required and perform all work necessary for the complete execution of all the work.

- B. The work and specifications shall include but not limited to the following:

I GENERAL REQUIREMENTS

- | | | | |
|---|---|-----|------|
| 1 | Mobilization/Demobilization | 1 | lot |
| 2 | Provision of Safety and Health Program | 1 | lot |
| 3 | Provision for temporary cover of existing machines for hotworks | 255 | sq.m |

II WELDING AND FABRICATION WORKS FOR CABLE TRAY

- | | | | |
|---|--|-------|-----|
| 4 | Supply and installation of cable tray | 41.66 | lm |
| 5 | Welding and fabrication of steel hanger | 1 | lot |
| 6 | Painting of cable tray and fabricated steel hanger | 1 | lot |

III ELECTRICAL WORKS

- | | | | |
|---|--|-----|------|
| 7 | Electrical works to include load side wiring from the source, 1500kVA transformer 13.8kV/220V, | 511 | sq.m |
|---|--|-----|------|

IV CLEAN-UP

- | | | | |
|---|--|---|-----|
| 8 | Hauling of excess materials and scraps (inside GA) | 1 | lot |
| 9 | Hauling/Clean-up of waste materials with no scrap value (outside GA) | 1 | lot |

- C. The Contractor shall furnish other work not explicitly cited in the drawings and specifications but is reasonably implied and required for the completion of the work under the Job Specification such as housekeeping/clean-up of work site at all times, restoration of damaged facilities and equipment affected during the performance of the above work.

ARTICLE III – SPECIFICATIONS

1. Angle Bar and C- Channel - Shall conform to ASTM A-36 standards, free from rust and dirt
2. Paints - Shall be Epoxy primer grey with QDE Aluminium silver finished for newly installed Cable tray/Cable tray hanger
3. Electricals – Shall Be Provided as follows;

Main Feeder;

- a. A three phase main circuit breaker with a rating of 1400 AT should be installed and connected to the 1500 KVA transformer source
- b. Three (3) sets of 3 # 200mm² THHN/THWN wires should be used as feeder wire serving the main circuit breaker.

Panel Board;

- c. Panel board for the equipment

i. Main CB:

1. 1 – 1400AT 3 Pole

ii. Branch CB:

1. 1 – 900AT 3 Pole
2. 2 – 500AT 3 Pole

- d. Three (3) sets of 3 # 200mm² THHN/THWN wires should be used for the supply of panel board and will be installed to the existing cable tray.

Cable Tray;

- e. A new cable tray will be installed to support the conductors serving three equipment.
 - i. 500mm width prefabricated cable tray which supports a total of 12 conductors.
 - ii. 300mm width prefabricated cable tray which supports a total of 8 conductors (going to annealing and pickling machine).

Equipment Wire Sizes;

- f. Annealing: 3 # 175mm² THHN; 1 # 60mm² THHN
- g. Pickling: 3 # 80mm² THHN; 1 # 30mm² THHN
- h. Degreasing: 3 # 80mm² THHN; 1 # 30mm² THHN

ARTICLE IV – COMPLETION

The project shall be completed not more than 120 CALENDAR days

Prepared by:

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Chief, Design Group CMS

Recommend Approval:

ENGR. ABELARDO GERRARD P. MENDOZA III
Superintendent. Engineering Division

Checked by:

ENGR. RYAN RAY M SANTOS, CE
Chief, CMS

Concur / Not Concur:

ARNOLD RAFAEL Y DEPAKAKIBO
Assistant Director

Approved by:

GERRY P AMANTE
Director

Republic of the Philippines
ARSENAL, DND
Camp General Antonio Luna
Lamiao, Limay, Bataan

13-Apr-23

BILL OF QUANTITIES
ELECTRICAL WORKS AT CBD ANNEALING MACHINE

ITEM NO.	SCOPE OF WORK & SPECIFICATIONS	QTY	UNIT	UNIT COST	TOTAL COST
I	GENERAL REQUIREMENTS				
1	Mobilization/Demobilization		1 lot		
2	Provision of Safety and Health Program		1 lot		
3	Provision for temporary cover of existing machines for hotworks		255 sq.m		
II	WELDING AND FABRICATION WORKS FOR CABLE TRAY				
4	Supply and installation of cable tray	41.66	lm		
5	Welding and fabrication of steel hanger		1 lot		
6	Painting of cable tray and fabricated steel hanger		1 lot		
III	ELECTRICAL WORKS				
7	Electrical works to include load side wiring from the source, 1500kVA transformer 13.8kV/220V,	511	sq.m		
IV	CLEAN-UP				
8	Hauling of excess materials and scraps (inside GA)		1 lot		
9	Hauling/Clean-up of waste materials with no scrap value (outside GA)		1 lot		

Prepared by:

ENGR. JOSE MARI B. MANDIGMA, CE
Chief, Design Group, CMS

Submitted by:

ENGR. ABELARDO GERRARD P. MENDOZA III
Superintendent, ED

Checked by:

ENGR. RYAN RAY M SANTOS, CE
Section Chief, CMS

Concur / Not Concur:

ARNOLD RAFAEL Y. DEPAKAKIBO
Assistant Director

Approved by:

GERBY P AMANTE
Director

Republic of the Philippines
ARSENAL, DND
Camp General Antonio Luna
Lamiao, Limay, Bataan

13-Apr-23

BILL OF QUANTITIES
ELECTRICAL WORKS AT CBD ANNEALING MACHINE

ITEM NO.	SCOPE OF WORK & SPECIFICATIONS	QTY	UNIT	UNIT COST	TOTAL COST
I	GENERAL REQUIREMENTS				
1	Mobilization/Demobilization	1	lot		17,500.00
2	Provision of Safety and Health Program	1	lot		12,500.00
3	Provision for temporary cover of existing machines for hotworks				
II	WELDING AND FABRICATION WORKS FOR CABLE TRAY				
4	Supply and installation of cable tray	41.66	lm		124,110.00
5	Welding and fabrication of steel hanger	1	lot		127,750.00
6	Painting of cable tray and fabricated steel hanger	1	lot		22,050.00
III	ELECTRICAL WORKS				
7	Electrical works to include load side wiring from the source, 1500kVA transformer 13.8kV/220V,	511	sq.m		7,156,166.78
IV	CLEAN-UP				
8	Hauling of excess materials and scraps (inside GA)	1	lot		5,000.00
9	Hauling/Clean-up of waste materials with no scrap value (outside GA)	1	lot		5,000.00
	(I) TOTAL DIRECT COST				7,440,076.78
	TOTAL INDIRECT COST				
	(II) MARK-UP (9% PROFIT + 8% OCM)				1,264,813.05
	(III) TAX/EVAT (5% OF I+II)				435,244.49
	(IV) GENERAL REQUIREMENTS				
	1.0 Mobilization/Demobilization				17,500.00
	2.0 Provision of Safety and Health Program				12,500.00
	3.0 Provision for temporary cover of existing machines for hotworks				20,174.00
	TOTAL PROJECT COST				9,190,308.32
	SAY				9,191,000.00

Prepared by:

ENGR. JOSE MARI B. MANDIGMA, CE
Chief, Design Group, CMS

Checked by:

ENGR. RYAN RAY M SANTOS, CE
Section Chief, CMS

Submitted by:

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Superintendent, ED

Concur / Not Concur:

ARNOLD RAFAEL Y. DEPAKAKIBO
Assistant Director

Approved by:

GERRY P AMANTE
Director

13-Apr-23

DETAILED ESTIMATE
ELECTRICAL WORKS AT CBD ANNEALING MACHINE

ITEM NO.	SCOPE OF WORK & SPECIFICATIONS	QTY	UNIT	MATERIAL COST		LABOR COST		EQUIPMENT COST	
				UNIT COST	TOTAL COST	UNIT COST	TOTAL COST	UNIT COST	TOTAL COST
I	GENERAL REQUIREMENTS								
1	Mobilization/Demobilization	1.00	lot	10,000.00	10,000.00	2,500.00	2,500.00	5,000.00	5,000.00
2	Provision of Safety and Health Program	1.00	lot	10,000.00	10,000.00	2,500.00	2,500.00		
3	Provision for temporary cover of existing machines for hotworks	255.00	sq.m						
	Scaffoldings	39.00	cu.m	-	-				
	Construction Bluesheet	26.20	lm	150.00	3,930.00				
	Fire blanket	26.20	lm	400.00	10,480.00				
	Sub Total				14,410.00		5,764.00		
II	WELDING AND FABRICATION WORKS FOR CABLE TRAY								
4	Supply and installation of cable tray	41.66	lm						
	50mm x 25mm x 25 mm x 2 mm thick c channel rung	18.00	pcs	1,800.00	32,400.00				
	100mm x 25mm x 25 mm x 2 mm thick c channel lock pins/ rivets	15.00	pcs	3,500.00	52,500.00				
		25.00	kgs	150.00	3,750.00				
	Sub Total				88,650.00		35,460.00		
5	Welding and fabrication of steel hanger	1.00	lot						
	2"x2"x1/4" thick Angle Bar	35.00	pcs	2,500.00	87,500.00				
	welding rod 6013	25.00	kgs	150.00	3,750.00				
	Sub Total			186,004.00	91,250.00		36,500.00		
6	Painting of cable tray and fabricated steel hanger	1.00	lot						
	Epoxy primer paint	15.00	gals	850.00	12,750.00				
	Paint roller #7	10.00	pcs	150.00	1,500.00				
	Paint brush #2	10.00	pcs	150.00	1,500.00				
	Sub Total			32,104.80	15,750.00		6,300.00		
III	ELECTRICAL WORKS								
7	Electrical works to include load side wiring from the source, 1500kVA transformer 13.8kV/220V, Electrical Panel Board in Nema 3R Powder Coated Finished Complete assembly with Mechanical Lugs and Grounding Bus., 1 main breaker with 3 branches	511.00	sq.m	-	-				
	Main breaker, 1400 AT / 230V, 3P	1.00	set	425,000.00	425,000.00				
	Branch circuit breakers;								
	- 2 unit of 500 AT / 230V, 3P								
	- 1 unit of 900 AT / 230V, 3P								
	1400AT / 230V, 3P circuit breaker	1.00	set	295,000.00	295,000.00				
	200mm2 THHN/THWN	1,503.00	mtrs	2,549.46	3,831,838.38				
	150mm2 THHN/THWN	90.00	mtrs	2,002.00	180,180.00				
	50mm2 THHN/THWN	180.00	mtrs	658.11	118,459.80				
	175mm2 THHN/THWN	102.00	mtrs	2,303.39	234,945.78				
	60mm2 THHN/THWN	34.00	mtrs	792.06	26,930.04				
	80mm2 THHN/THWN	222.00	mtrs	1,043.95	231,756.90				
	30mm2 THHN/THWN	74.00	mtrs	371.15	27,464.77				

13-Apr-23

DETAILED ESTIMATE
ELECTRICAL WORKS AT CBD ANNEALING MACHINE

ITEM NO.	SCOPE OF WORK & SPECIFICATIONS	QTY	UNIT	MATERIAL COST		LABOR COST		EQUIPMENT COST	
				UNIT COST	TOTAL COST	UNIT COST	TOTAL COST	UNIT COST	TOTAL COST
	terminal lugs fit for 200mm ²	36.00	pcs	704.00	25,344.00				
	terminal lugs fit for 150mm ²	24.00	pcs	560.00	13,440.00				
	terminal lugs fit for 50mm ²	48.00	pcs	140.00	6,720.00				
	terminal lugs fit for 175mm ²	6.00	pcs	616.00	3,696.00				
	terminal lugs fit for 60mm ²	2.00	pcs	182.00	364.00				
	terminal lugs fit for 80mm ²	12.00	pcs	476.00	5,712.00				
	terminal lugs fit for 30mm ²	4.00	pcs	98.00	392.00				
	2" x 2" x 1/4" thick angle bar	31.00	pcs	2,500.00	77,500.00				
	Sub Total				5,504,743.67		1,651,423.10		
IV	CLEAN-UP								
8	Hauling of excess materials and scraps (inside GA)	1.00	lot			5,000.00	5,000.00		
9	Hauling/Clean-up of waste materials with no scrap value (outside GA)	1.00	lot			5,000.00	5,000.00		
	GRAND TOTAL				5,700,393.67		1,739,683.10		

(I) TOTAL DIRECT COST
TOTAL INDIRECT COST
(II) MARK-UP (8% PROFIT + 9% OCM)
(III) TAX/EVAT (5% OF I+II)
(IV) GENERAL REQUIREMENTS
1.0 Mobilization/Demobilization
2.0 Provision of Safety and Health Program
3.0 Provision for temporary cover of existing machines for hotworks

TOTAL PROJECT COST
SAV
9,190,308.32
9,191,000.00

Prepared by:

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Checked by:

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Section Chief, CMS

Submitted by:

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Superintendent, ED

Concur / Not Concur:

ARNOLD RAFAEL Y. DEPAKAKIBO
Assistant Director

Approved by:

GERRY P. AMANTE
Director

APPROVED BUDGET FOR THE CONTRACT
ELECTRICAL WORKS AT CBD ANNEALING MACHINE

Project Name and Location

Stations:

Length:

Contract Duration: 120 CD

ITEM NO.	DESCRIPTION	QUANTITY	UNIT	DIRECT COST	MARK-UPS OCM ¹ PROFIT	TOTAL MARK-UP % VALUE	VAT ²	INDIRECT COST	UNIT COST
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
I	GENERAL REQUIREMENTS								
1	Mobilization/Demobilization	1.00	lot	17,500.00					
2	Provision of Safety and Health Program	1.00	lot	12,500.00					
3	Provision for temporary cover of existing machines for hotworks	255	sq.m	20,174.00					
II	WELDING AND FABRICATION WORKS FOR CABLE TRAY								
4	Supply and installation of cable tray	41.66	lm	124,110.00	9.0	8	17.0	21,098.70	7,260.44
5	Welding and fabrication of steel hanger	1	lot	127,750.00	9.0	8	17.0	21,717.50	7,473.38
6	Painting of cable tray and fabricated steel hanger	1	lot	22,050.00	9.0	8	17.0	3,748.50	1,289.93
III	ELECTRICAL WORKS								
7	Electrical works to include load side wiring from the source, 1500kVA transformer 13.8kV/220V,	511	sq.m	7,156,166.78	9.0	8	17.0	1,216,548.35	418,635.76
IV	CLEAN-UP								
8	Hauling of excess materials and scraps (inside GA)	1	lot	5,000.00	9.0	8	17.0	850.00	292.50
9	Hauling/Clean-up of waste materials with no scrap value (outside GA)	1	lot	5,000.00	9.0	8	17.0	850.00	292.50
	TOTAL			7,440,076.78				1,264,813.05	435,244.49
	GRAND TOTAL							9,190,308.32	
								SAY	9,191,000.00

PREPARED BY:

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Chief, Design Group, CMS

CONCUR / NOT CONCUR:

ARNOLD RAFAEL Y DEPAKAL
Assistant Director

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ENGR RYAN RAYM SANTOS, CE
Chief, CMS

APPROVED:

GERY P AMANTE
Director

RECOMMEND APPROVAL:

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Supt., Eng'g. Div.

¹ OCM = Overhead, Contingencies and Miscellaneous
² VAT = Value Added Tax