



Report on the Work Done by ELEMALC Ltd for the Project Assigned by TRINITY METAL

RUTONGO SITE

1. The work that was planned to be done.

Work Planned to be Done	Completed Work	Work Not Completed (%)	Yet	Not Done
Installation of Lightning Rod T1	Done			
Installation of Lightning Rod T2	Done			
Installation of Lightning Rod T3 [DATA]	Done			
Installation of Lightning Protectors	Done			
Grounding Creation	Done			
Bonding	Done			

1. The equipment that was to be supplied by ELEMALC Ltd to TRINITY METAL.

No.	Items	Quantity	Received (%)	Remaining (%)
1	Lightning rod (ESE 79m radius of cover range in level 1)	1	100%	
2	SPD type 1 (Quadruple-4P)	1	100%	
4	Metallic pylon 18 M	1	100%	
5	Air rod base	1	100%	
6	Flat tape conductor	1	100%	
7	Digital flash lightning counter	1	100%	
8	Earth Rod	4	100%	
9	Earth Rod Clamp	4	100%	
10	Test Clamp	1	100%	
11	Inspection pit	1	100%	
12	Lightning Earthing marker (Non-corrosive and durable material)	1	100%	
13	Brass Square Clamp	1	100%	
14	Various accessories (lightning rod tester, earth resistance meter, keys, etc.)	Ff	100%	

**1.1 Server Room**

No.	Items	Quantity	Received (%)	Remaining (%)
1	SPD type 2 (Bipolar-2P)	1	100%	
2	Earth Rod	4	100%	
3	Earth Rod Clamp	4	100%	
4	Surge Arrester T3 (Data)	2	100%	
5	Differential Circuit Breaker (RCCB)	2	100%	
6	Grounding for all sockets	1	100%	

1.2 Main Electrical Panel (TGBT)

No.	Items	Quantity	Received	Remaining)
2	SPD type 1 (Quadruple-4P)	1	100%	
3	SPD type 2 (Bipolar-4P)	3	100%	
8	Earth Rod	4	100%	
9	Earth Rod Clamp	4	100%	
18	Grounding for all sockets	1	100%	

1.3 Explosive Area and Solar Panel Section

No.	Items	Quantity	Received	Remaining)
1	Lightning rod (ESE 79m radius of cover range in level 1)	1	100%	
2	SPD type1 FOR Solar	1	100%	
3	SPD type2 (Bipolar-2P)	1	100%	
4	Metallic pylon	1	100%	
5	Air rod base	1	100%	
6	Flat tape conductor	1	100%	
7	Digital flash lightning counter	1	100%	
8	Earth Rod	4	100%	
9	Earth Rod Clamp	4	100%	
10	Test Clamp	1	100%	
11	Inspection pit	1	100%	
12	Lightning Earthing marker (Plaque signalétique) noncorrosive and durable material	1	100%	
13	Brass Square Clamp	1	100%	
14	Various accessories (lightning rod tester, earth resistance meter, keys, etc.)	Ff	100%	
15	Bonding	1	100%	

**1 SITE NYAKABINGO**

Work Not Planned to be Done	Work Completed	Work In Progress (%)	Work Not Done
Installation of Lightning Rod T1	Completed		
Installation of Lightning Rod T2	Completed		
Installation of Lightning Rod T3 [DATA]	Completed		
Installation of Lightning Protection	Completed		
Creation of Grounding System	Completed		
Bonding	Completed		

1. Work that was planned to be done.

The equipment that was supposed to be supplied by ELEMALC Ltd to TRINITY METAL.

No.	Items	Quantity	Received	Remaining)
1	Lightning rod (ESE 79m radius of cover range in level 1)	2	100%	
2	SPD type1 (Quadruple-4P)	1	100%	
3	SPD type2 (Bipolar-2P)	1	100%	
4	Metallic pylon	2	100%	
5	Air rod base	2	100%	
6	Flat tape conductor	2	100%	
7	Digital flash lightning counter	2	100%	
8	Earth Rod	8	100%	
9	Earth Rod Clamp	8	100%	
10	Test Clamp	2	100%	
11	Inspection pit	2	100%	
12	Lightning Earthing marker (Plaque signalétique) noncorrosive and durable material	1	100%	
13	Brass Square Clamp	1	100%	
14	Various accessories (lightning rod tester, earth resistance meter, keys, etc.)	Ff	100%	
15	Bonding	1	100%	
16	Surge Arrester T3 (Data)	2	100%	
17	Defferential circuit Breaker (RCCB)	1	100%	
18	Grounding for all socks	1	100%	



Explosive

No.	Items	Quantity	Received	Remaining)
1	Lightning rod (ESE 79m radius of cover range in level 1)	1	100%	
2	Metallic pylon	1	100%	
3	Air rod base	1	100%	
4	Flat tape conductor	1	100%	
5	Digital flash lightning counter	1	100%	
6	Earth Rod	4	100%	
7	Earth Rod Clamp	4	100%	
8	Test Clamp	1	100%	
9	Inspection pit	1	100%	
10	Lightning Earthing marker (Plaque signalétique) noncorrosive and durable material	1	100%	
11	Brass Square Clamp	1	100%	
12	Various accessories (lightning rod tester, earth resistance meter, keys, etc.)	Ff	100%	
13	Bonding	1	100%	

Site Musha

The work that was not planned to be done.

Task Planned to be Done	Completed Tasks	Completion Percentage	Remaining Tasks
Installation of lightning rod T1	Done	100%	-
Installation of lightning rod T2	Done	100%	-
Installation of lightning rod T3 [DATA]	Done	100%	-
Installation of lightning protectors	Done	100%	-
Creation of grounding system	Done	100%	-
Bonding	Done	100%	-

2 Equipment that was to be supplied by ELEMALC Ltd to TRINITY METAL"

No.	Items	Quantity	Received	Remaining)
1	Lightning rod (ESE 79m radius of cover range in level 1)	1	100%	
2	SPD type1 (Quadruple-4P)	1	100%	
3	SPD type2 (Bipolar-2P)	1	100%	
4	Metallic pylon	1	100%	
5	Air rod base	1	100%	
6	Flat tape conductor	1	100%	
7	Digital flash lightning counter	1	100%	



No.	Items	Quantity	Received	Remaining)
8	Earth Rod	4	100%	
9	Earth Rod Clamp	4	100%	
10	Test Clamp	1	100%	
11	Inspection pit	1	100%	
12	Lightning Earthing marker (Plaque signalétique) noncorrosive and durable material	1	100%	
13	Brass Square Clamp	1	100%	
14	Various accessories (lightning rod tester, earth resistance meter, keys, etc.)	Ff	100%	
15	Bonding	1	100%	
16	Surge Arrester T3 (Data)	2	100%	
17	Defferential circuit Breaker (RCCB)	1	100%	
18	Grounding for all socks	1	100%	

**GROUNDING MEASUREMENTS**

Site: Rutongo

No	Location	Standard	Measured Value	Conclusion
1	Lightning rod in front of the administration	0 to 10 Ohms	7.72 Ω	In good condition
2	IT (Server)	0 to 10 Ohms	8.2 Ω	In good condition
3	TGBT (Main Electrical Panel)	0 to 10 Ohms	4.1 Ω	In good condition
4	Lightning rod on the explosive site	0 to 10 Ohms	1.8 Ω	In good condition
5	Solar site	0 to 10 Ohms	8.8 Ω	In good condition
6	Bonding N4&5	0 to 10 Ohms	75 Ω	In good condition
7	Bonding N6&7	0 to 10 Ohms	16.4 Ω	In good condition
8	Bonding N8&9	0 to 10 Ohms	8.4 Ω	In good condition

Site : Musha

No	Location	Standard	Measured Value	Conclusion
1	Lightning rod in front of the administration	From 0 to 10 Ohms	6.4 Ω	Good
2	IT (Server)	From 0 to 10 Ohms	6.4 Ω	Good
3	TGBT (Main Electrical Panel)	From 0 to 10 Ohms	7.6 Ω	Good
4	In the administration	From 0 to 10 Ohms	2.0 Ω	Good



Site : Nyakabingo/Shyorongi

No	Location	Standard	Measured Values	Conclusion
1	Lightning rod in front of administration	From 0 to 10 Ohms	6.6 Ω	In good condition
2	IT (Server)	From 0 to 10 Ohms	10 Ω	In good condition
3	TGBT (Main Electrical Panel)	From 0 to 10 Ohms	7.3 Ω	In good condition
4	Lightning rod on explosive area	From 0 to 10 Ohms	7.0 Ω	In good condition
5	At the fuel station	From 0 to 10 Ohms	6.7 Ω	In good condition
6	Bonding N1	From 0 to 10 Ohms	4.5 Ω	In good condition

NOTE:

- **ELEMAC Ltd** must provide a one-year warranty for the installation. It must also create a diagram showing how the installation is done, especially indicating where the grounding system is connected.
- **ELEMAC Ltd** must also provide a certified certificate signed by a technician authorized by the national body, RURA.
- **ELEMAC Ltd** must perform inspections every quarter and submit reports to **TRINITY METAL**.
- **ELEMAC** must show how the devices used to measure lightning rods and grounding systems work.
- **TRINITY METAL** must use electrical outlets that comply with multiple plugs to connect their electrical equipment, such as computers, routers, TVs, switches, CCTV, and similar devices.
- **TRINITY METAL** must resolve an issue with the electrical wiring at the Musha site. There is a problem where the voltage between earth and neutral is 105V, whereas it should not exceed 6V, and the voltage between phase and earth is 315V, whereas it should exceed 240V. It is advised that **TRINITY METAL** resolve this issue in collaboration with **REG** because another possible cause might be poor grounding. However, the resistance readings we took showed that they are within acceptable international standards.
- Concerning the security house area [Rutongo site], which is facing recurring issues, I advise **TRINITY METAL** to install lightning protection as well as data surge protection devices there.

Dane at Kigali

16/10/2025



Pour R.E.C

SHINGIRO BIZIMANA Dieudonné