

 Eskom	Report	Transmission
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Title: **Scope of Work for the Installation of Plastic Bird Perch Diverters and Stainless-Steel Straps on the North East Grid Lines**

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CONFIDENTIAL

1. INTRODUCTION

This project is justified as an important requirement. Transmission lines faults have been identified as one of the key factors that affect the overall performance of transmission lines. In the 2019/20 financial year bird faults contributed ~43% (326) of the total number of line faults experienced on the Transmission network. Bird faults are one of the significant contributors to System Minute losses, in the event of trip & lock-outs. Improvement of line performance has been identified as one of the key objectives of the performance Operational Excellence (OE) stream, driven by the Group Executive hence this project to install plastic bird perch diverters.

The poor performing lines identified in the North East Grid that require mitigation are listed in section 2.1 below.

2. SCOPE OF WORK

The scope of work is for installation of plastic bird perch diverters and stainless-steel straps for North East Grid lines. Plastic bird perch diverters must be collected at the following address

North East Grid: Eskom Park Building 75

Physical address:

Cnr Jellicoe & Watermeyer street

Eskom Park

Emalahleni

1035

These plastic bird perch diverters and stainless-steel straps must then be installed as per the installation guideline contained in the specification mentioned in Section 2.2. The lines and quantities to be installed on these lines are indicated in the table in Section 2.1 below.

2.1 PACKAGING DETAILS

The plastic bird perch diverters and stainless-steel straps must be collected at the location/s indicated above and transported to the individual lines/sites as indicated below for installation.

Line Name	Bird perch diverters	Stainless Steel straps
Camden - Komati No1 275kV	3 900	11 700
Camden - Normandie No1 400kV	5 520	16 560
Grootvlei - Matla No1 400kV	12 720	38 160
Hendrina - Vulcan No1 400kV	5760	17 280

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Hendrina - Vulcan No2 400kV	3600	10 800
TOTAL	31 500	94 500

Any bird perch diverter and/or straps left over after the installation must be returned to the location/s indicated above to be kept as spares for maintenance and/or for any additional installations if necessary.

2.2 DESIGN DRAWING AND STANDARDS

Plastic bird perch diverters and stainless-steel straps must be installed in accordance with the Installation Guideline (240-156074235) referred below:

Document Name	Document Number
Plastic Bird Perch Diverter Installation Guideline	240-156074235

Refer to Annex A for installation Schedule and Annex C for the tower type outline diagrams. The Strain tower will be considered as triple “I-string” for the installation of the plastic bird perch diverters.

NB. For North East Grid, the strategy will be to appoint contractor that will execute the project for the installation of Plastic Bird Perch Diverters on live lines (OFF ARC), under “Close Proximity”. The contractors’ tower climbers will approach live structure for access to non-electrical equipment, conduct risk assessments before executing the work.

2.3 DEFINITIONS

2.3.1 Disclosure Classification

Controlled Disclosure: The information is readily available to Eskom employees (internal use). Information may also be accessed by or disclosed to third parties with specific authorisation or consent (either enforced by law or discretionary).

This information includes a wide spectrum of internal business data that can be used by all employees and can be shared with authorised business partners.

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ANNEX A: PLASTIC BIRD PERCH DIVERTERS INSTALLATION SCHEDULE

The estimated quantity of plastic bird perch diverters that can be installed per tower based on the various insulator configurations will be as follows:

Insulator	Left Outer Phase	Centre Phase	Right Outer Phase	Total per Tower
V – V – V	24 x 1m	24 x 1m	24 x 1m	72m
I – V – I	8 x 1m	24 x 1m	8 x 1m	38m
I – I – I	8 x 1m	16 x 1m	8 x 1m	32m
Strain Bend Right	8 x 1m	16 x 1m		24m
Strain Bend Left		16 x 1m	8 x 1m	24m
Inline Strain	8 x 1m	16 x 1m	8 x 1m	32m

1. DETAIL INFORMATION OF LINES AND TOWERS

The contractor will need to indicate the number of towers that can be installed per day based on insulator configuration. The Installation Guideline for plastic bird perch diverters 240-156074235 has been referenced regarding details for the installation; refer to Section 3 for (V-V-V), (I-V-I) and (I-I-I) installation configurations. The strain towers are categories into two types (Bend and Inline), for Bend's the installation should be done on two phases and for the Inline the installation should be done on all phases (the contractor must target to install the plastic bird perch diverters over the Jumper – insulators for strain towers are installed horizontally).

During tender process, the Contractor is required to submit the estimated number of towers that can complete per day for installation of Plastic Bird Perch Diverters.

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1.1 CAMDEN KOMATI NO 1 275 kV LINE

Tower Series KV15.

Section		Total Suspension Towers with I – V – I	Total Strain Towers (Bend or Inline)
<i>From Tower</i>	<i>To Tower</i>		
1 CMN/KI 162	1 CMN/KI 192	31	0
1 CMN/KI 228	1 CMN/KI 261	26	5
Total Number of Towers		57	5

1.2 CAMDEN - NORMANDIE NO 1 400 kV LINE

Tower Series 501: refer to Annex C for the outline drawings.

Section		Total Suspension Towers with V – V – V	Total Suspension Towers with I – V – I	Total Strain Towers (Bend or Inline)
<i>From Tower</i>	<i>To Tower</i>			
1 CA/NOR 9	1 CA/NOR 29	6	14	1
1 CA/NOR 81	1 CA/NOR 104	12	10	2
1 CA/NOR 132	1 CA/NOR 154	10	11	2
1 CA/NOR 213	1 CA/NOR 236	18	6	0
Total Number of Towers		46	41	5

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1.3 GROOTVLEI - MATLA NO 1 400 kV LINE

Tower Series 501: refer to Annex C for the outline drawings.

Section		Total Suspension Towers with V – V – V	Total Suspension Towers with I – V – I	Total Strain Towers (Bend or Inline)
From Tower	To Tower			
1 GR/MA 1	1 GR/MA 40	5	27	8
1 GR/MA 76	1 GR/MA 117	6	36	0
1 GR/MA 207	1 GR/MA 315	28	65	16
1 GR/MA 323	1 GR/MA 343	3	11	5
Total Number of Towers		42	139	29

1.4 HENDRINA - VULCAN NO 1 400 kV LINE

Tower Series 501, 517: refer to Annex C for the outline drawings.

Line Section		Total Suspension Towers with I – V – I	Total Suspension Towers with V – V – V	Total Strain Towers (Bend or Inline)
From Tower	To Tower			
1 HE/VUL 1	1 HE/VUL 35	2	27	6
1 HE/VUL 59	1 HE/VUL 119	31	23	7
Total Number of Towers		33	50	13

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1.5 HENDRINA - VULCAN NO 2 400 kV LINE

Tower Series 501: refer to Annex C for the outline drawings.

Line Section		Total Suspension Towers with I – V – I	Total Strain Towers (Bend or Inline)
<i>From Tower</i>	<i>To Tower</i>		
2 HE/VUL 1	2 HE/VUL 39	32	7
2 HE/VUL 68	2 HE/VUL 88	20	1
Total Number of Towers		52	8

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ANNEX B: TECHNICAL EVALUATION CRITERIA

1) Scope

This section covers the criteria for the technical evaluation of the contractor for the installation of Plastic Bird Perch Diverter within Eskom Holdings SOC (Ltd). The document addresses the standard documented technical evaluation criteria to be used when evaluating contractors for qualification to be appointed for execution of the project. This will be in line with the Eskom Holdings SOC (Ltd) requirements, and it is applicable to all the technical evaluations for the related tender submissions.

2) Requirements

The technical tenders received will be evaluated via a document evaluation (desktop assessment) process. The evaluations are done to establish whether all the key tender deliverables are met. A minimum total of 70% is required to pass the technical requirements.

The evaluation exercise is performed by the appointed Eskom technical team. This initial part of the evaluation starts when submissions are opened and assessed for the first time. The submitted documents will be evaluated against the evaluation criteria as stated in this document.

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1. Installation of Plastic Perch Bird Diverters on Lattice Structures					
Item No.	Item	Weighted (60%)			
		Weight (W)	Actual (A)	Max (M)	Result(R) (A / M) X W
1.1	Provide Method Statements/Safe Work Procedure for the installation of Plastic Bird Perch Diverters under close proximity conditions (the line will be live and OFF ARC).	20%		5	0.0%
1.2	Provide task manual for the installation of Plastic Bird Perch Diverters under close proximity conditions (the line will be live and OFF ARC).	20%		5	0.0%
1.3	Provide a list of equipment with valid certificates that are used for this part (Test or inspection certificates where necessary).	10%		5	0.0%
1.4	Provide pictures where similar work has been carried out on lattice structures and line voltages (220 kV and above).	10%		5	0.0%
Result (R) = (A / M) X W		Maximum: 60%			
Subsection = sum of Result (R)		0.0%			
Comments					
1.1	Copy for job specific [5]				
1.2	Copy for job specific [5]				
1.3	Comprehensive list [5]				
1.4	Various pictures from at least two projects [5]				

2. Feedback from contractor's Client					
Item No	Item	Weighted (15%)			
		Weight (W)	Actual (A)	Max (M)	Result(R) (A / M) X W
2.1	Provide evidence that similar work has been undertaken by the tenderer during the last three years. References must include the project name, the voltage level (220 kV and above on lattice structures), the scope of work and the contact details of the client(s).	15%		5	0.0%
Result (R) = (A / M) X W		Maximum: 15%			
Subsection = sum of Result (R)		0.0%			
Comments					
2.1	Evidence of similar work or relevant projects (220 kV and above lattice structures): At least one 220 kV line project and above. The tenderer must have done the full scope of work. Subcontracted parts of the scope are not acceptable. [2]				
	List of relevant projects (2005 to 2021) earlier than 2005 gets zero points: At least one 220 kV project and above (lattice structure) the tenderer must have done the full scope of work. [2]				
	Voltage Levels (400 kV and above lattice structure): At least one 400 kV project. The tenderer must have done the full scope of work. [1]				

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3. Project and construction management					
Item No.	Item	Weighted (25%)			
		Weight (W)	Actual (A)	Max (M)	Result(R) (A / M) X W
3.1	Project and site organograms indicating key personnel and staffing including authorised personnel.	5%		5	0.0%
3.2	Provide job profile for all key project and construction management personnel (including project managers and site manager).	10%		5	0.0%
3.3	Materials Management (Provide system and documentation to substantiate this).	10%		5	0.0%
	Explain the process you follow to compile a set of AS-BUILT documentation. This documentation should be a complete file including all final tower positions, number of installed Plastic Bird Perch Diverters.				
Result (R) = (A / M) X W		Maximum: 25%			
Subsection = sum of Result (R)		0.0%			
Comments					
3.1	➤ Head office organograms [2] ➤ Project site office organograms [2] ➤ Integration of head office staff with site office [1]				
3.2	➤ Provide job profile for the project manager [2] ➤ Provide job profile for the construction site manager [2] ➤ Provide job profile for the construction supervisors [1]				
3.3	➤ Materials management system [1] ➤ Materials management documentation (e.g., delivery notes, etc.) [2] ➤ Process for As-built documentation [2]				

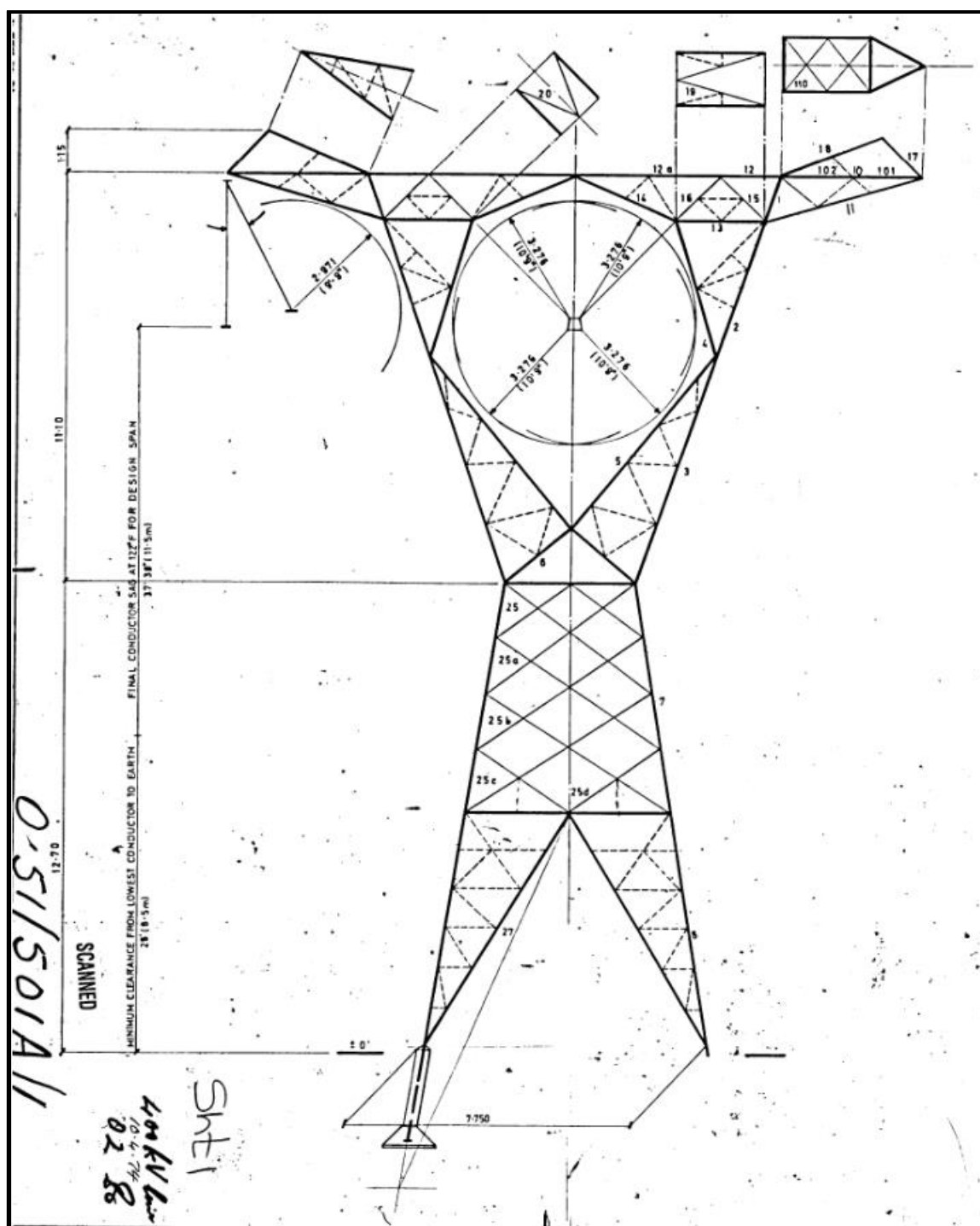
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ANNEX C: TOWER OUTLINE DIAGRAMS

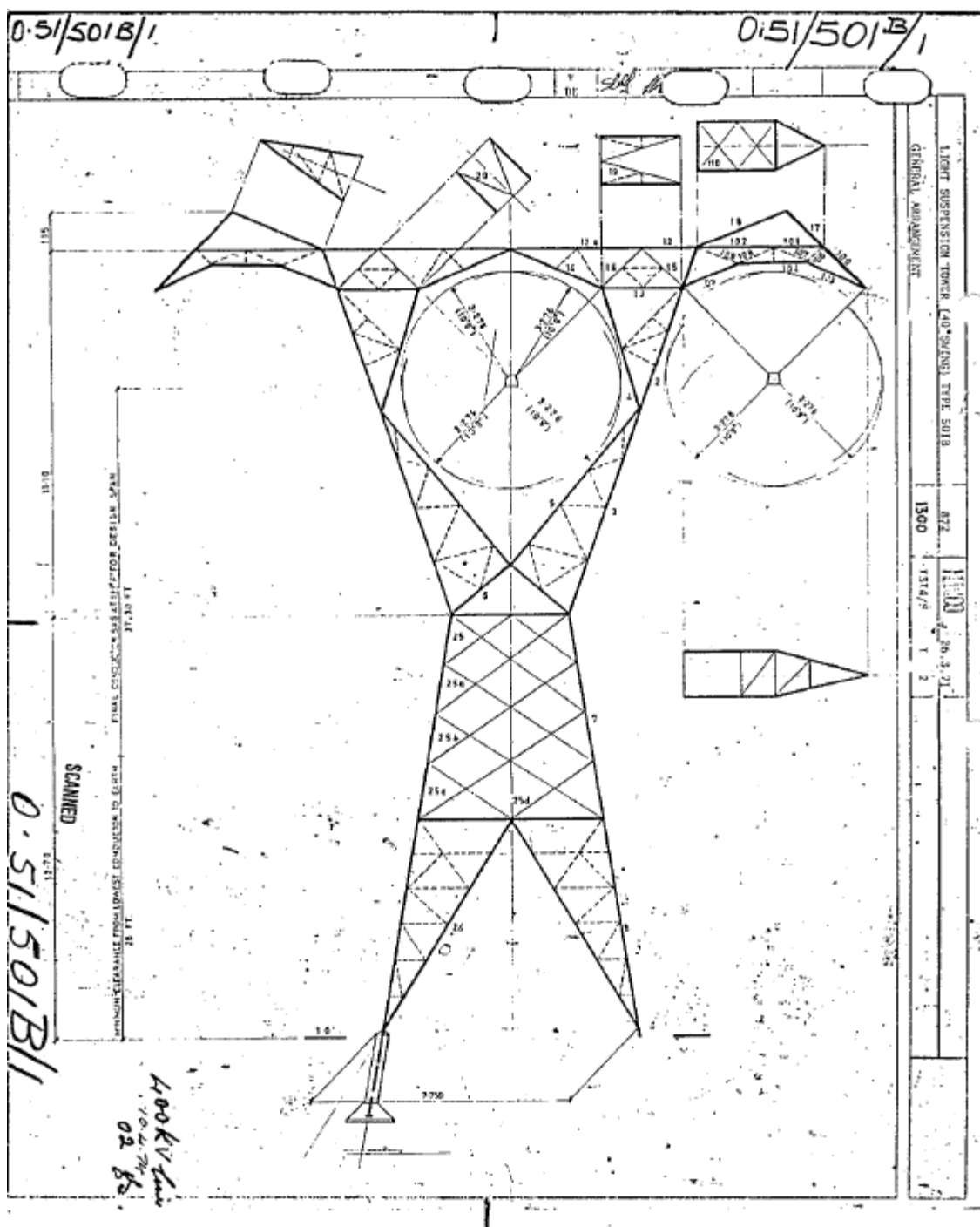
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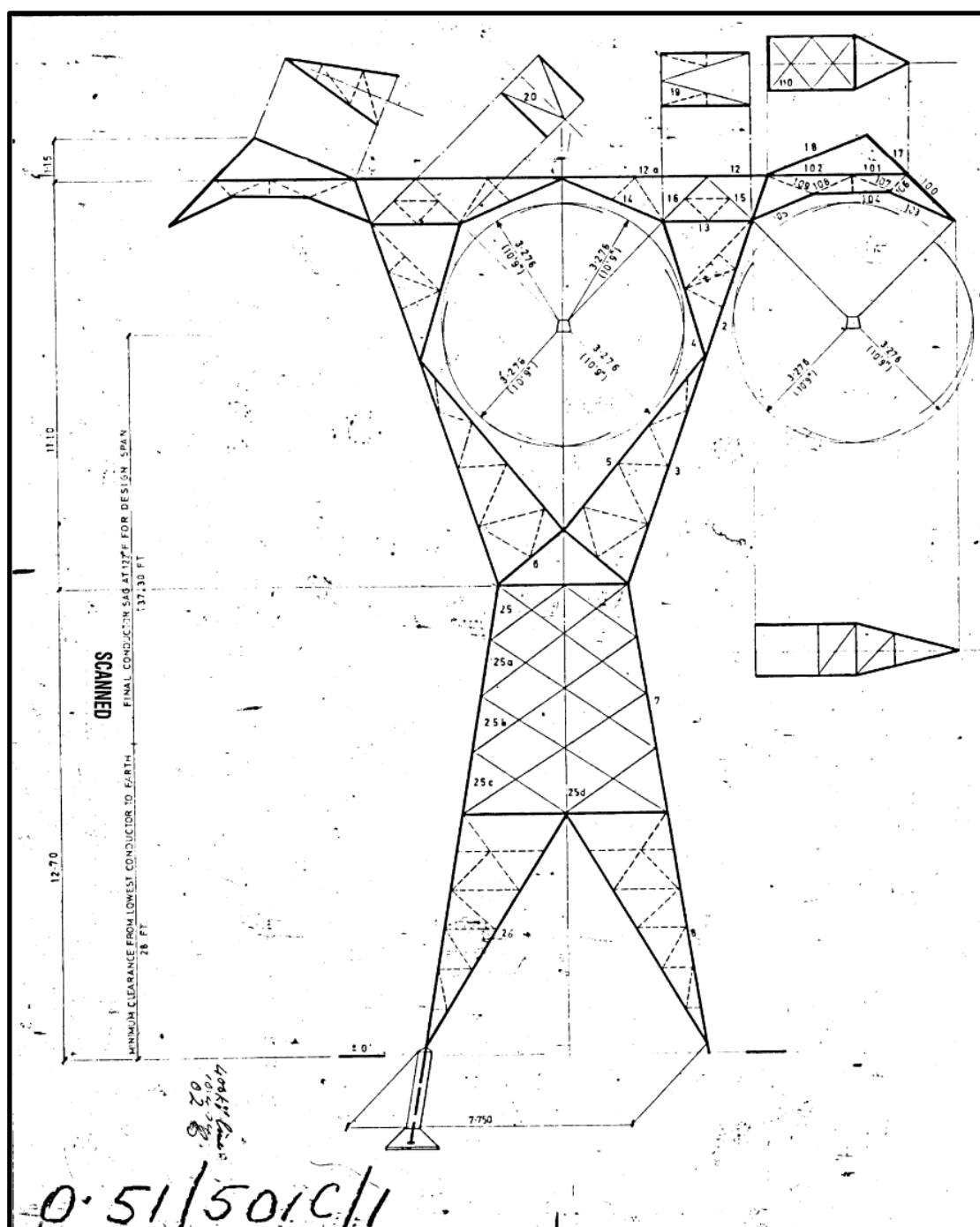
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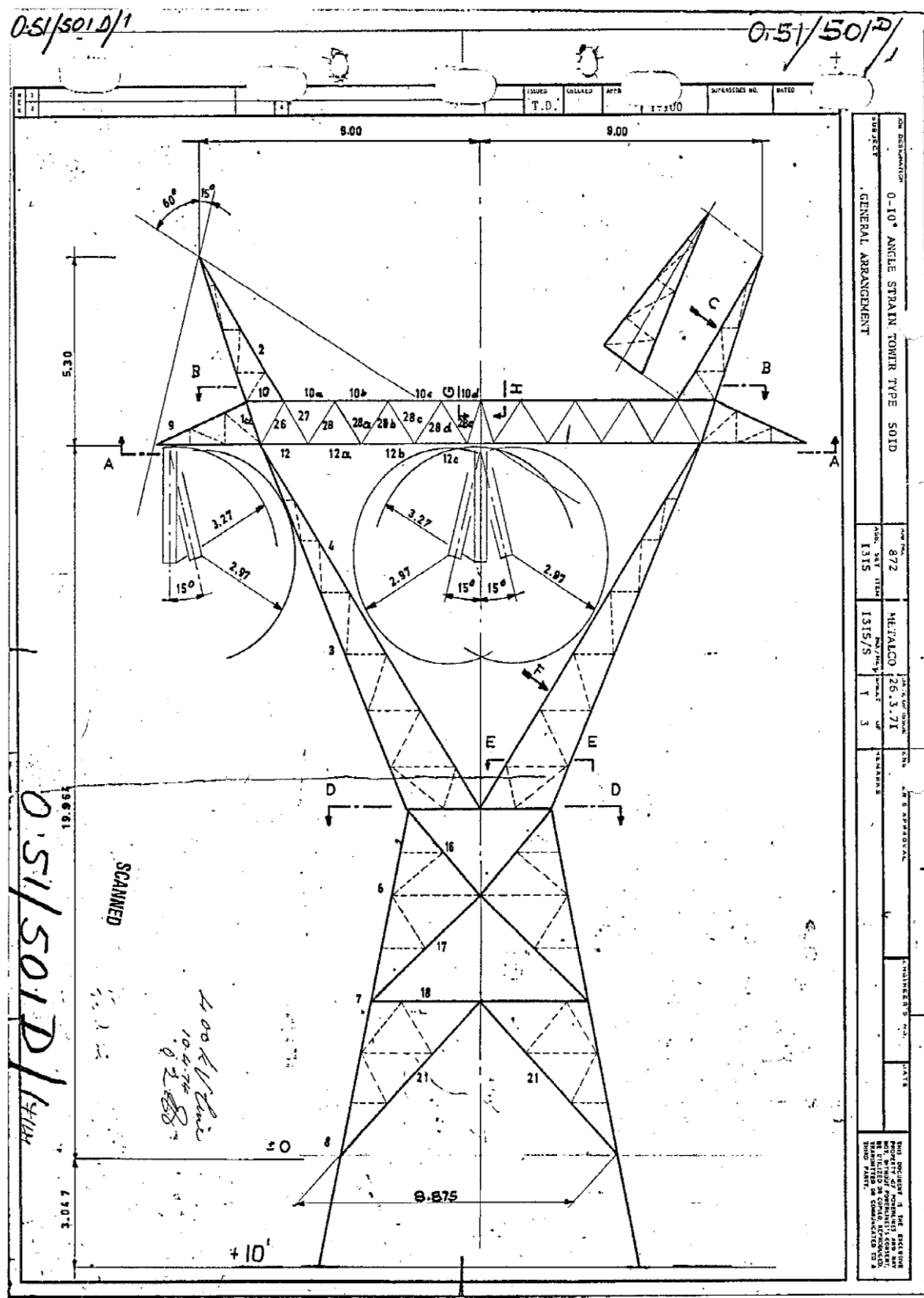
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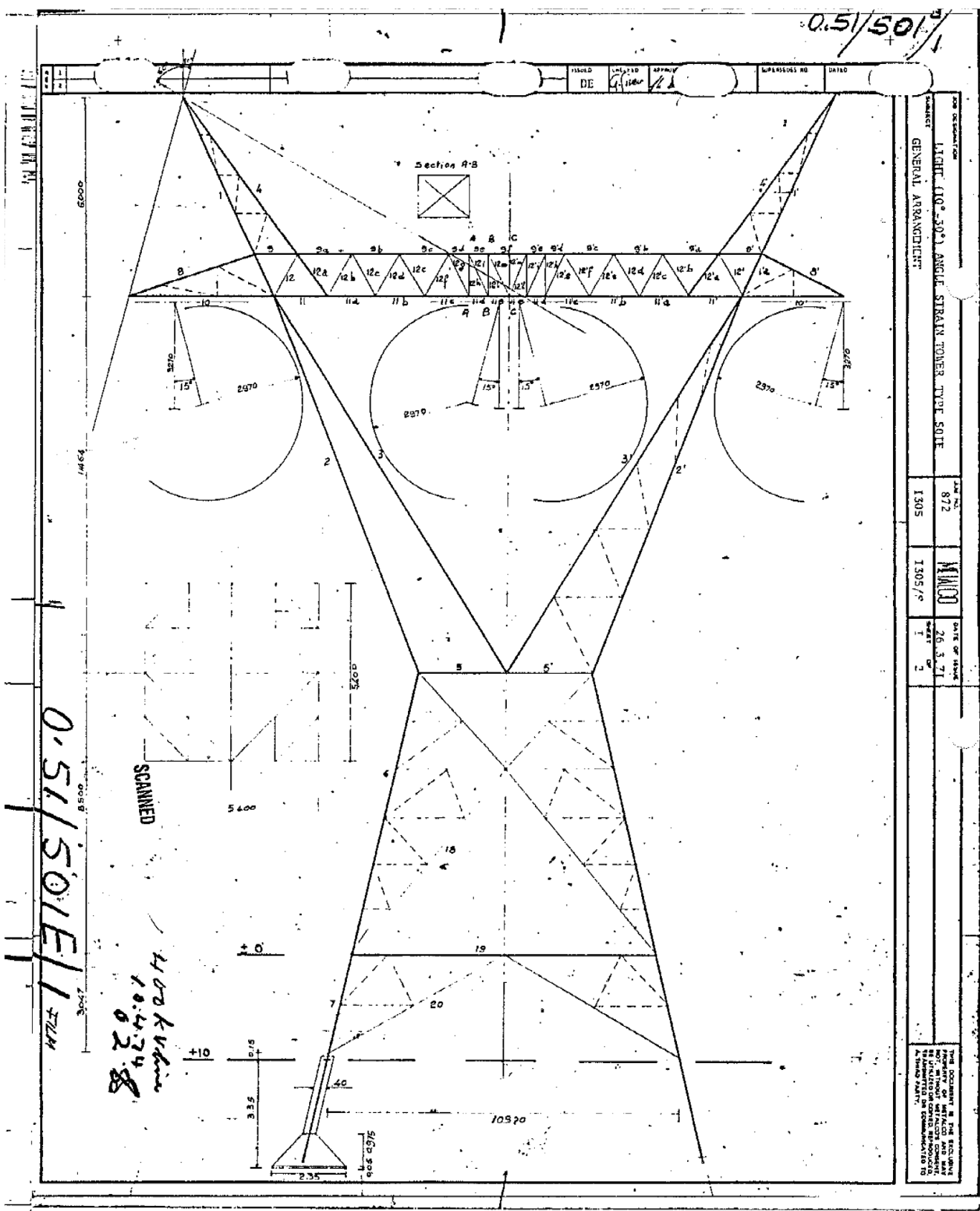
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Scope of Work for the Installation of Plastic Bird Perch Diverters
and Stainless-Steel Straps on the North East Grid Lines

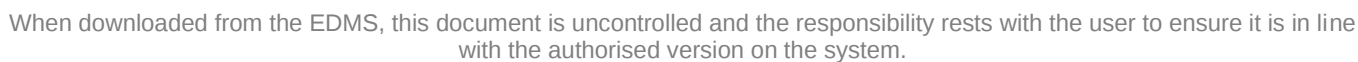
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Revision: 1
Page: 18 of 24

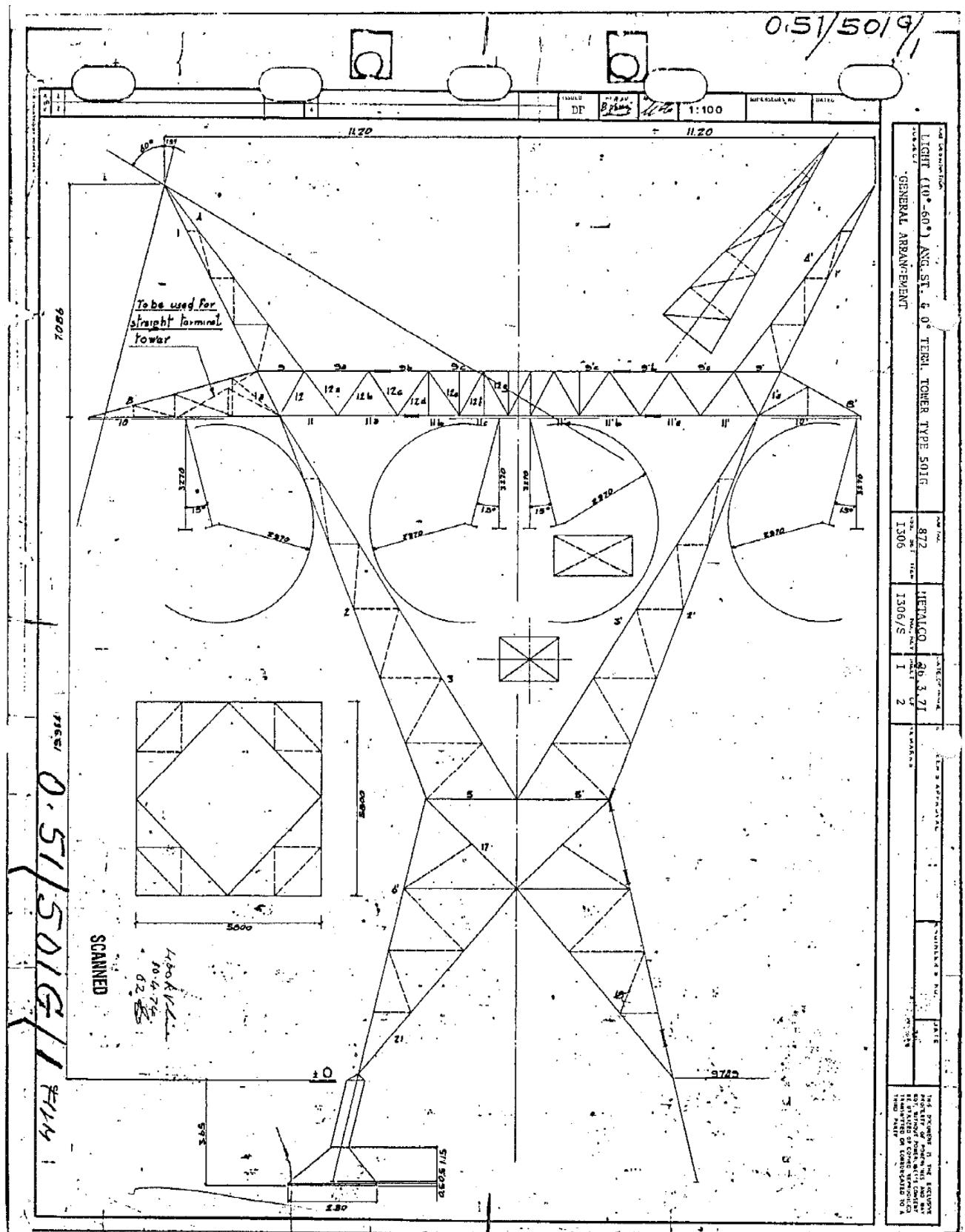


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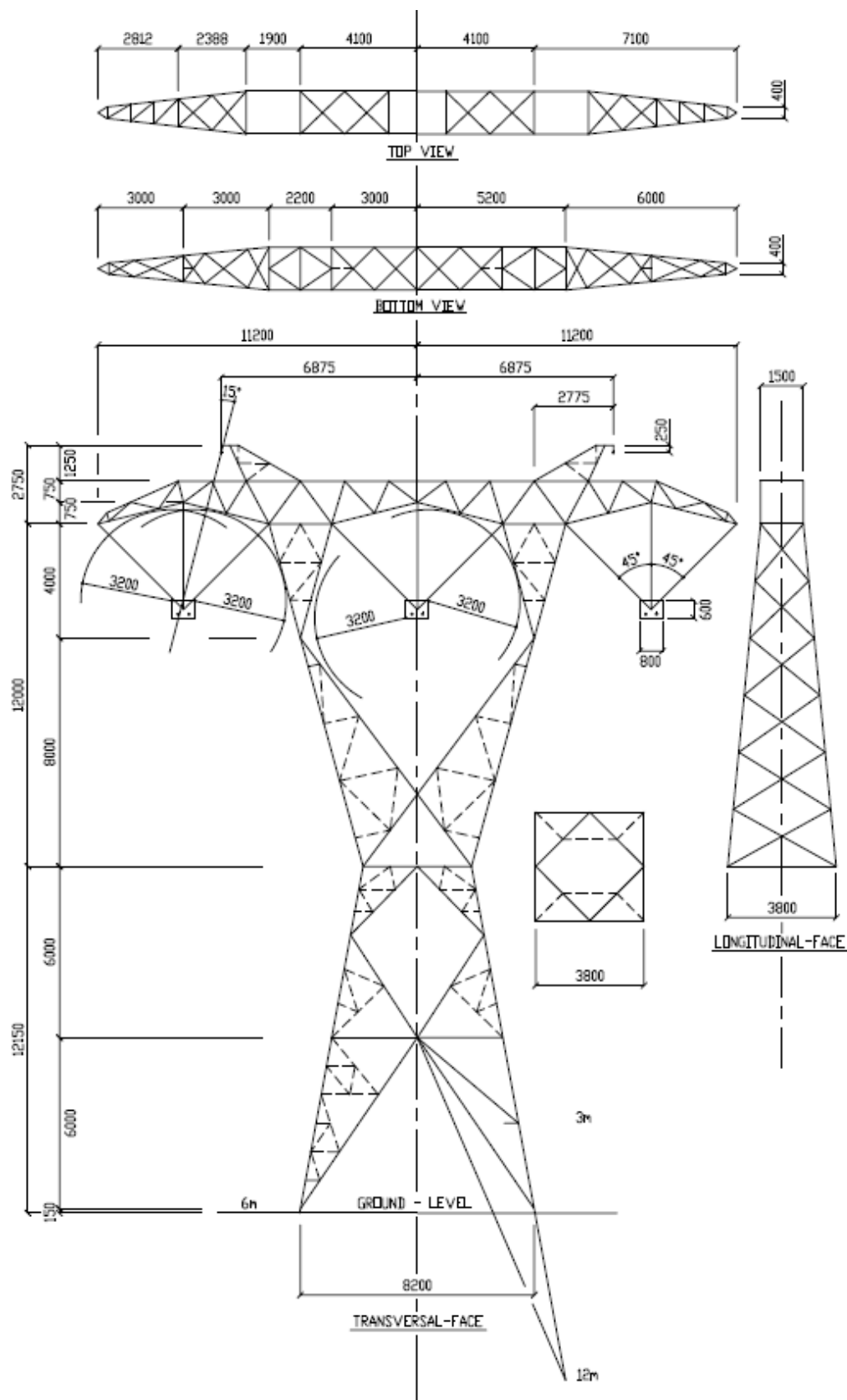
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400 kV TRANSMISSION LINE
SELF SUPP. SUSPENSION TOWER TYPE "517A"

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18000 - 33000 IN 1500 INCREMENTS (NOMINAL)

SECTION E-E

SECTION F-F

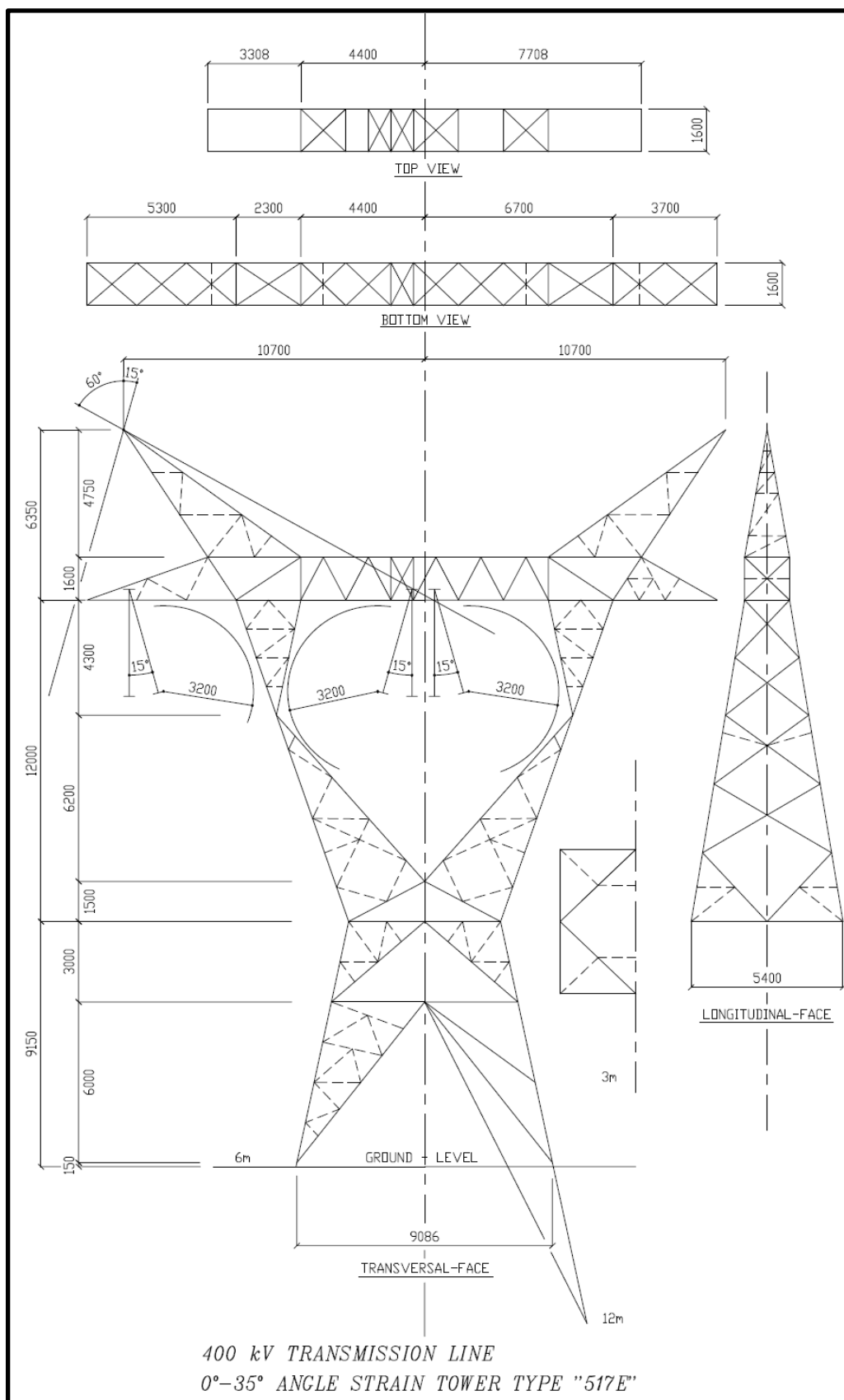
SECTION C-C

SECTION D-D

24 mm ϕ (1400 MRL) GUY
MAX. ALLOWABLE TENSION
= $427.0 \times 0.9 = 384.3$ KN

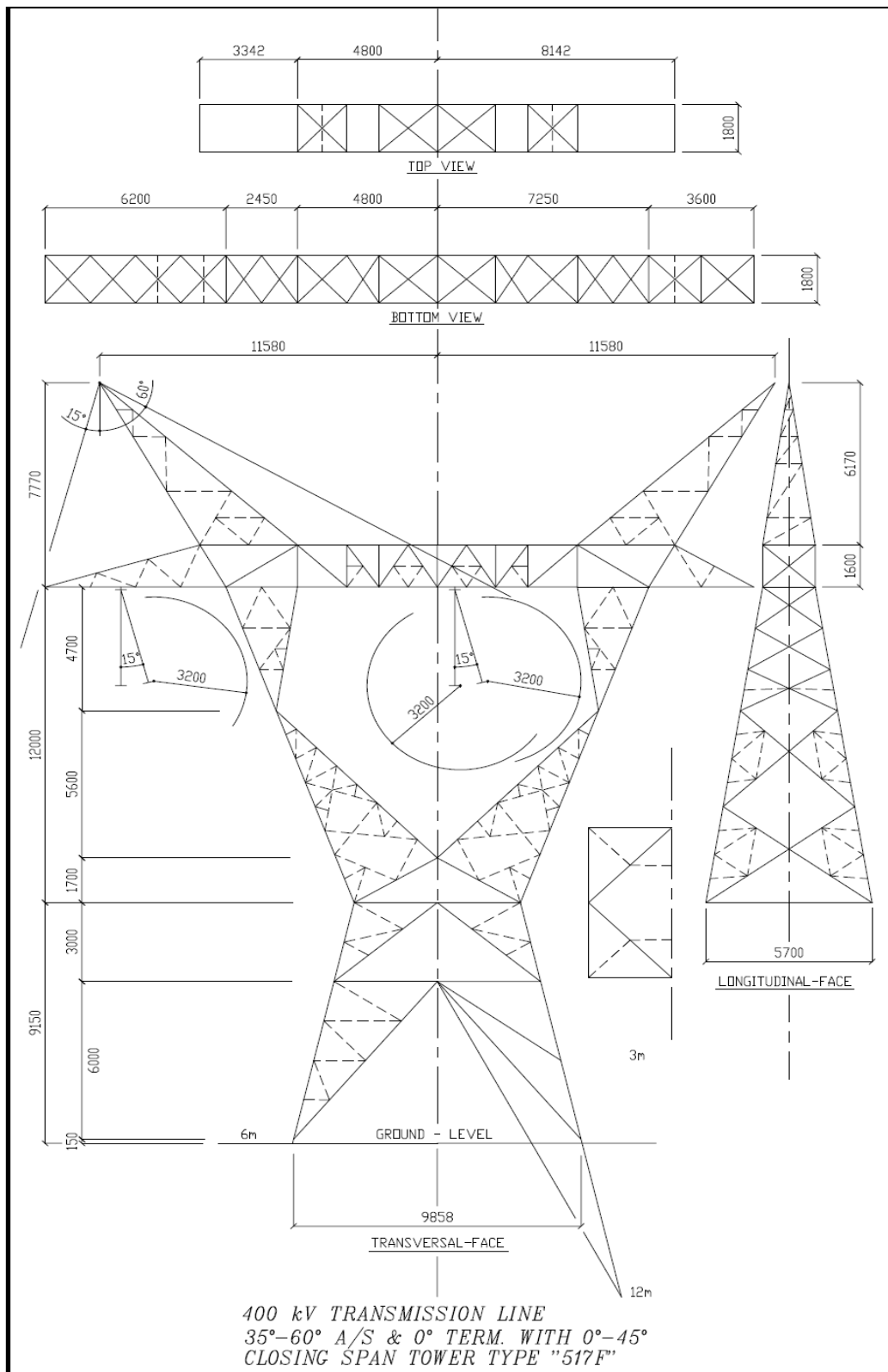
15° MAX GROUND SLOPE

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