

LIST OF MATERIALS

**Acceptable for Use on Systems of
SYARIKAT SESCO BERHAD**

DISCLAIMER

Every effort has been made to ensure the accuracy of this document. However, in case of discrepancies, records of AP&S Divisional Technical Committee are the authoritative source.

PREFACE

This list supersedes all preceding issues including revisions. Revised sheets reflecting changes in the list will be issued quarterly and should be inserted in order to keep your copy up to date.

The items shown in this publication include material and equipment for distribution facilities. Items not listed include office equipment, tools and work equipment, items of electric general plant and consumer owned wiring facilities.

In addition to items accepted on a general basis, this list also includes items accepted on a conditional basis. As one of the conditions in the acceptance of an item on a conditional basis, suppliers are required to obtain the company's concurrence prior to its use.

Any supplier/manufacturer who desire to have their items placed on the list, or any user believing an existing item should be removed from the list, or any communication calling attention to an error or omission in the list, such as a wrong catalog number, an obsolete item, etc., should address to: -

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1.0 SUBSTATION EQUIPMENT

1.1 Pillar

1.1.1 7W6F Distribution Pillar

Manufacturer	Type/Catalogue/ Model No.	Country of Manufacture
Teknix Electrical & Electronic Sdn. Bhd, Kuching	-	Malaysia
Spanners International, S'pore / Spanners Engineering, M'sia	-	Singapore / Malaysia
Tamco System (M) Sdn Bhd.	-	Malaysia

1.1.2 LV 4-Way Mini Pillar (DIN)

Manufacturer	Type/Catalogue/ Model No.	Country of Manufacture
Spanners International, S'pore	-	Singapore
Tamco System (M) Sdn Bhd	-	Malaysia
Sun System Eng. Sdn Bhd, M'sia	-	Malaysia
Teknix Electrical & Electronic Sdn Bhd, Kuching	-	Malaysia
Tenaga Kenari	-	Malaysia
Note: Field trial of maximum 4 units is required		

1.2 RMU

1.2.1 11 kV Oil RMU

Manufacturer	Type/Catalogue/ Model No.	Country of Manufacture
CG Lucy	Trident	India
Lucy Switchgear FZE	Trident Ratings: 12kV, 3 phase, 630A, 20 kA for 3 s, 95 kV BIL.	Dubai, UAE
W. Lucy	Trident	U.K.

1.2.2 11 kV SF6 RMU

Manufacturer	Type/Catalogue/ Model No.	Country of Manufacture
ABB Limited	Safelink SF6 Insulated RMU (outdoor)	New Zealand
Note: (a) Cable termination boots of approved type shall be supplied for all bushings. (b) If not specified elsewhere, the number of plug-in voltage indicator to be supplied shall be 10% of total number of RMUs ordered. (c) Restricted to compact substations & indoor substations only.		
Schneider Electric Ltd & Schneider Electric (M) Sdn. Bhd.	Ringmaster C (21 kA version)	U.K & Malaysia
Note: (a) Model with rated voltage of 13.8 kV shall be supplied in order to achieve the required BIL. (b) Pressure relief facility, mechanical trip push button & voltage present indicators (for ring switches) shall be provided.		
Schneider Electric (M) Sdn. Bhd., Selangor.	RM6 SF6 Insulated RMU (Indoor type)	Malaysia
Note: (a) Limited to indoor use and rated voltage of 17.5 kV. (b) Screen-type elbow-connector termination kits shall be used for the connection to the cables.		
Tamco Corporate Holdings Sdn. Bhd., Selangor.	12 kV Tamco (GR1) SF6 Insulated RMU	Malaysia
Note: (a) Stainless steel gas tank and internal arc explosion valve shall be provided.		
W.Lucy & Co. Ltd.	15.5 kV SF6 RMU Sabre	Dubai, UAE
Note: (a) Only accept 15.5 kV RMU instead of 12 kV RMU for achieving our BIL rating. (b) Dual ratio CT (preferably 100/50/5) shall be provided in order to cater for transformer size ranging from 200 kVA to 1500 kVA. A selection guide on time-lag-fuse (TLF) shall be forwarded to us for comment (if any). (c) Voltage indicator and temperature compensated pressure gauge shall be provided. (d) Training shall be provided on the installation, operation & maintenance of the RMU including the proper cable termination. (e) Field trial of maximum of 5 units is required for a minimum of 6 months period before final acceptance.		

1.3 Switchgear

1.3.1 11 kV AIS Switchgear

Manufacturer	Type/Catalogue/ Model No.	Country of Manufacture
Siemens (Partial GIS)	NX PLUS-C	Germany
ABB	Unigear ZS Series	Malaysia
Tamco	VK Series	Malaysia
Toprank	HV12-2000	Malaysia
Note: Subject to FAT and type testing. Accept only Siemens vacuum bottles.		
Xiamen Huadian Switchgear, Co. Ltd	Gelpag AMS Series	China
Note: Subject to FAT and field trial limited to one Substation only.		

1.3.2 33 kV GIS Switchgear

Manufacturer	Type/Catalogue/ Model No.	Country of Manufacture
Siemens	8D Series	Germany
ABB	ZX Series	Germany/ Malaysia
Areva	WS Series	Germany/ Malaysia

1.4 Transformer

1.4.1 11/433 kV Distribution Transformer

Manufacturer	Type/Catalogue/ Model No.	Country of Manufacture
ABB	Up to 2 MVA	Singapore
AICHI	Up to 2 MVA	Japan
Arab-Malaysia SGB	Up to 2 MVA	Malaysia
Charoenchai	Up to 1.5 MVA	Thailand
Ekarat	Up to 1.5 MVA	Thailand
Emo Ohrid	Up to 2 MVA	Yugoslavia
EWT (RWT)	Up to 2 MVA	Malaysia
MTM	Up to 2 MVA	Malaysia
SESCO-Efacec	Up to 1.5 MVA	Malaysia
South Wales	Up to 2 MVA	U.K.
Thai Trafo	Up to 1.5 MVA	Thailand
Toshiba	Up to 2 MVA	Japan

Tirathai	Up to 1.5 MVA	Thailand
STM	Up to 1.5 MVA	Malaysia
Note: All new STM transformer shall be 100% Factory Acceptance Test witnessed by SESCO's representative until further notice.		
TUSCO TRAFO	Up to 1.5MVA	Thailand
Note: First batch of field trial unit (limit to 5 units) shall be subject to FAT and type testing.		

1.4.2 33/.433 kV Distribution Transformer

Manufacturer	Type/Catalogue/ Model No.	Country of Manufacture
ABB	Up to 2.5 MVA	Singapore / Australia
AICHI	Up to 2.5 MVA	Japan
Arab-Malaysia SGB	Up to 2.5 MVA	Malaysia
Charoenchai	Up to 2.5 MVA	Thailand
Ekarat	Up to 1.5 MVA	Thailand
EWT (RWT)	Up to 2.5 MVA	Malaysia
MTM	Up to 2.5 MVA	Malaysia
Tirathai	Up to 2.5 MVA	Thailand

1.4.3 33/11 kV Distribution Transformer

Manufacturer	Type/Catalogue/ Model No.	Country of Manufacture
ABB	Up to 2.5 MVA	Australia
ABB	Up to 2.5 MVA	Singapore
Arab-Malaysia SGB	Up to 5 MVA	Malaysia
Charoenchai	Up to 2.5 MVA	Thailand
Ekarat	Up to 1.5 MVA	Thailand
MTM	Up to 5 MVA	Malaysia
Tirathai	Up to 5 MVA	Thailand
EWT	Up to 2.5 MVA	Malaysia

1.4.4 33/11 kV ONAN / ONAF Power Transformer c/w OLTC

Manufacturer	Type/Catalogue/ Model No.	Country of Manufacture
ALSTOM	Up to 35 MVA	Turkey
ABB	Up to 35 MVA	Australia
AICHI	Up to 35 MVA	Japan
Daihen	Up to 35 MVA	Thailand
MTM	Up to 35 MVA	Malaysia
Tirathai	Up to 25 MVA	Thailand
Meidensha/Hitachi/Fuji	-	Japan
Mitsubishi/Toshiba	-	Japan
Takaoka	-	Japan
SGB	-	Germany
Efacec	-	Portugal
ABB	-	Sweden/ Turkey/ Thailand
Pauwels	-	Belgium
Areva	-	Turkey
BEST	-	Turkey
Hyundai	-	Korea
New Korea	-	Korea
Xian		China
Koncar	-	Croatia
Zhejiang Jiangshan Transformer Co. Ltd.	-	China
Note: Field trial of maximum 5 units is required.		
Pauwels Trafo Asia	-	Indonesia
Note: Field trial of maximum 6 unit is required.		

1.4.5 11/.433 kV Pad-Mounted (Compact) Substation

Manufacturer	Type/Catalogue/ Model No.	Country of Manufacture
EWT (RWT)	EPS Series	Malaysia
Schneider Electric	LR Range	Malaysia

2.0 UNDERGROUND EQUIPMENT

2.1 Termination Kits

2.1.1 LV Termination Kit, Heat Shrink, Indoor/Outdoor

Manufacturer	Type/Catalogue/ Model No.	Country of Manufacture
Sucofit/Tyco	Heat Shrink	Switzerland
Raychem/Tyco	Heat Shrink	U.S.A./ Germany

2.1.2 11 kV Termination Kit, Heat Shrink, Indoor/Outdoor

Manufacturer	Type/Catalogue/ Model No.	Country of Manufacture
Cellpack	Hybrid Heat- Shrinkable	Switzerland/ Germany
Sucofit/Tyco	Heat Shrink	Switzerland
Raychem/Tyco	Heat Shrink	U.S.A./ Germany

2.1.3 33 kV Termination Kit, Heat Shrink, Indoor/Outdoor

Manufacturer	Type/Catalogue/ Model No.	Country of Manufacture
Raychem/Tyco	Heat Shrink	U.S.A./ Germany

2.1.4 11/33 kV Straight Through & Transition Joint Kits

Manufacturer	Type/Catalogue/ Model No.	Country of Manufacture
Raychem/Tyco	Heat Shrink	U.S.A./ Germany
Cellpack	Resin/Tapping	Switzerland/ Germany
ABB Kabledon	Resin/Tapping	Sweden

Note:
(a) Only accept ABB Kabledon GHL 1500 two-component polyurethane based resin complete with approved type fibre box.

2.2 Underground Cable

2.2.1 LV XLPE Cable

Manufacturer	Type/Catalogue/ Model No.	Country of Manufacture
Central Cable (M) Bhd., Malaka.	-	Malaysia
Fujikura Federal Cables Sdn. Bhd., Butteworth	-	Malaysia
Furukawa Electric Cables (M) Sdn.,	-	Malaysia
Olympic Cable Co. Sdn Bhd, Malaka	-	Malaysia
Tenaga Cable Industries Sdn. Bhd.	-	Malaysia
Universal Cable (M) Sdn. Bhd., Johor	-	Malaysia
Universal Cable Sarawak Sdn. Bhd., Kuching	-	Malaysia
Wonderful Wire & Cable Bhd., Johor	-	Malaysia
Mitti Power Cables Sdn. Bhd., Johor	-	Malaysia
Leader Cable Industry Bhd	-	Malaysia
Tai Sin Electric Cables (M) Sdn Bhd	-	Malaysia
Southern Cables (M) Sdn Bhd	-	Malaysia

2.2.2 11 kV XLPE Cable

Manufacturer	Type/Catalogue/ Model No.	Country of Manufacture
Central Cable (M) Bhd., Malaka.	-	Malaysia
Federal Power Sdn. Bhd., Selangor	-	Malaysia
Fujikura Federal Cables Sdn. Bhd., Butteworth	-	Malaysia
Furukawa Electric Cables (M) Sdn.,	-	Malaysia
Leader Cable Industry Bhd., Penang	-	Malaysia
Olympic Cable Co. Sdn. Bhd., Malaka	-	Malaysia
Power Cables Malaysia Sdn. Bhd. (BICC General)	-	Malaysia
Tenaga Cable Industries Sdn. Bhd.	-	Malaysia
Universal Cable (M) Sdn. Bhd., Johor	-	Malaysia
PT VOKSEL Electric Tbk	-	Indonesia

2.2.3 33 kV XLPE Cable

Manufacturer	Type/Catalogue/ Model No.	Country of Manufacture
Central Cable (M) Bhd., Malaka.	-	Malaysia
Federal Power Sdn. Bhd., Selangor	-	Malaysia
Fujikura Federal Cables Sdn. Bhd., Butteworth	-	Malaysia
Furukawa Electric Cables (M) Sdn.Bhd.,	-	Malaysia
Leader Cable Industry Bhd., Penang	-	Malaysia
Power Cables Malaysia Sdn. Bhd. (BICC General)	-	Malaysia
Olympic Cable Co. Sdn. Bhd.	-	Malaysia
Universal Cable (M) Sdn. Bhd., Johor	-	Malaysia

2.2.4 33kV Earth link Box

Manufacturer	Type/Catalogue/ Model No.	Country of Manufacture
Evergrow Electrical Engineering Sdn Bhd	IP68 3+1 & 6+1	Malaysia
AK Power Solution	3+1 LS3S/PN:20740 & 6+1 BS6V	Australia

3.0 OVERHEAD EQUIPMENT

3.1 ABI & Switches

3.1.1 11 kV 400A 3-Phase Outdoor ABI Switch (On Load / Off Load)

Manufacturer	Type/Catalogue/ Model No.	Country of Manufacture
ABB	R 125 (Ezibreak)	Australia
Lucy Switchgear	Rapier RX	Dubai
S & C	Alduti Rupter	Canada

3.1.2 33 kV 400A 3-Phase Outdoor ABI Switch (On Load / Off Load)

Manufacturer	Type/Catalogue/ Model No.	Country of Manufacture
ABB	R 170 (Ezibreak)	Australia
Lucy Switchgear	Rapier RX	Dubai
S & C	Alduti Rupter	Canada

3.2 Auto Recloser

3.2.1 Auto Recloser 11 kV

Manufacturer	Type/Catalogue/ Model No.	Country of Manufacture
Whipp & Bourne Ltd.	GVR 15/12	U.K.
Schneider Electric Pty Ltd.	N15 (12 kV)	Australia
* Formerly known as Nu-Lec Pty Ltd. (Australia)		

3.2.2 Auto Recloser 33 kV

Manufacturer	Type/Catalogue/ Model No.	Country of Manufacture
Schneider Electric Pty Ltd.	N38 (38 kV)	Australia
* Formerly known as Nu-Lec Pty Ltd. (Australia)		
Whipp & Bourne Ltd.	GVR 38/8	U.K.

3.3 Conductor

3.3.1 Simalec Conductor (AAAC)

Manufacturer	Type/Catalogue/ Model No.	Country of Manufacture
Consolidated Cable	-	Malaysia
Federal Power Sdn. Bhd., Selangor	-	Malaysia
Fujikura Federal Cables Sdn. Bhd., Butteworth	-	Malaysia
Tenaga Cable Industries Sdn. Bhd.	-	Malaysia
Universal Cable (M) Sdn. Bhd., Johor	-	Malaysia
Southern Cables (M) Sdn Bhd	-	Malaysia

3.3.2 HV 11 kV Aerial Bundle Cable

Manufacturer	Type/Catalogue/ Model No.	Country of Manufacture
Central Cable (M) Bhd., Malaka.	-	Malaysia
Federal Power Sdn. Bhd., Selangor	-	Malaysia
Fujikura Federal Cables Sdn. Bhd., Butteworth	-	Malaysia
Furukawa Electric Cables (M) Sdn.,	-	Malaysia
Leader Cable Industry Bhd., Penang	-	Malaysia
Olympic Cable Co. Sdn. Bhd., Malaka	-	Malaysia
Tenaga Cable Industries Sdn. Bhd.	-	Malaysia
Universal Cable (M) Sdn. Bhd., Johor	-	Malaysia

3.3.3 LV Aerial Bundled Cable

Manufacturer	Type/Catalogue/ Model No.	Country of Manufacture
Central Cable (M) Bhd., Malaka.	-	Malaysia
Federal Power Sdn. Bhd., Selangor	-	Malaysia
Fujikura Federal Cables Sdn. Bhd., Butteworth	-	Malaysia
Furukawa Electric Cables (M) Sdn.,	-	Malaysia
Leader Cable Industry Bhd., Penang	-	Malaysia
Olympic Cable Co. Sdn. Bhd., Malaka	-	Malaysia
Tenaga Cable Industries Sdn. Bhd.	-	Malaysia
Universal Cable (M) Sdn. Bhd., Johor	-	Malaysia
Southern Cables (M) Sdn Bhd	-	Malaysia

3.3.4 LV PVC Insulated Aluminium Conductor

Manufacturer	Type/Catalogue/ Model No.	Country of Manufacture
Universal Cable (M) Sdn. Bhd., Johor	-	Malaysia
Universal Cable (S) Sdn. Bhd., Sarawak	-	Malaysia
Leader Cable Industry Sdn. Bhd., Penang	-	Malaysia
Olympic Cable Co. Sdn. Bhd., Malaka	-	Malaysia
Southern Cables (M) Sdn Bhd	-	Malaysia

3.4 **EDO or ABFI**

3.4.1 11 kV ABFI 100A 150 MVA with Arc Shortening Rod

Manufacturer	Type/Catalogue/ Model No.	Country of Manufacture
ABB	Series V, P/No.7502523	Australia
Joongwon Electric Corp.	J&W 80442	Korea
S&C Electric Company	Type XS	U.S.A/China

3.4.2 33 kV ABFI 100A 150 MVA with Arc Shortening Rod

Manufacturer	Type/Catalogue/ Model No.	Country of Manufacture
ABB	Series V, P/No.7502520	Australia
Joongwon Electric Corp.	J&W 80445	Korea
S&C Electric Company	Type XS	U.S.A/China

3.5 Insulator

3.5.1 11 kV Pin Insulator, Brown, Glazed

Manufacturer	Type/Catalogue/ Model No.	Country of Manufacture
NGK	HRAA-168N	Japan
Dalian Ceramic Technic Co. Ltd.	P2-11-Y	China
Note: First batch of field trial units shall be subject to FAT		

3.5.2 33 kV Pin Insulator, Brown, Glazed

Manufacturer	Type/Catalogue/ Model No.	Country of Manufacture
NGK	HRAA-302Q	Japan
Dalian Ceramic Technic Co. Ltd.	P1-33-Y	China
Note: First batch of field trial units shall be subject to FAT		

3.5.3 Shackle Insulator

Manufacturer	Type/Catalogue/ Model No.	Country of Manufacture
Dalian Ceramic Technic Co. Ltd.	CTC (Type ED-2B)	China

3.5.4 Stay Insulator (Permali)

Manufacturer	Type/Catalogue/ Model No.	Country of Manufacture
Permali Gloucester Ltd.	Part No.31-123 (Single Beam)	U.K.

3.5.5 Suspension Insulator

Manufacturer	Type/Catalogue/ Model No.	Country of Manufacture
Dalian	XP-70 (52-3)	China
NGK	Cat.No.CA- 515BB	Japan
NGK	Cat.No.CA- 515BB & CA- 515B7	China
Zibo-Morgan	XP-70 (52-3)	China

3.5.6 HV Stay Insulator

Manufacturer	Type/Catalogue/ Model No.	Country of Manufacture
Dalian Insulator Co.	GY4	China

3.6 **Overhead Connectors**

3.6.1 Alu. PG Clamp for 50-100 mm² Stranded HD Alu. Conductor

Manufacturer	Type/Catalogue/ Model No.	Country of Manufacture
Karl Pfisterer Stuttgart	Model No. 330- 670-670	Germany
Max Hellstern GmbH	Cat.No. 3590S	Germany

3.6.2 Bi-metal PG Clamp for Alu. 25-150 mm² & Cu 10-95 mm²

Manufacturer	Type/Catalogue/ Model No.	Country of Manufacture
Karl Pfisterer Stuttgart	Model No. 330- 712-001	Germany
Max Hellstern GmbH	Cat.No. 3911	Germany

3.6.3 Insulation Piercing Connector

Manufacturer	Type/Catalogue/ Model No.	Country of Manufacture
Karl Pfisterer Stuttgart	-	Germany
Max Hellstern GmbH	-	Germany
ENSTO	-	Finland

3.6.4 Insulating Shroud suitable for Bi-metal PG Clamp (Alu. 25-150, Cu 10-95) & Alu. PG Clamp 50-100 mm

Manufacturer	Type/Catalogue/ Model No.	Country of Manufacture
Karl Pfisterer Stuttgart	SP8 (Model 499-999-200)	Germany
ENSTO	SP 16	Finland
Wenhong Plastic Industry Sdn. Bhd.	-	Malaysia

3.7 Poles

3.7.1 9 Metre Concrete Pole (LV)

Manufacturer	Type/Catalogue/ Model No.	Country of Manufacture
PMW Concrete Industries Sdn Bhd, Perak	-	Malaysia
Smart Crete Sdn Bhd, Sarawak	-	Malaysia

3.7.2 Steel Poles

Manufacturer	Type/Catalogue/ Model No.	Country of Manufacture
Sarwaja Timur Sdn. Bhd.	-	Malaysia
KKB Engineering Bhd.	-	Malaysia

3.8 Street Lighting and Accessories

3.8.1 SON Ballast, 70W

Manufacturer	Type/Catalogue/ Model No.	Country of Manufacture
Philips (M)	BSN 70W	Malaysia
SE Everlast Sdn. Bhd.	SONLL 70W (LL-Low Loss)	Malaysia
SOLEX	DLS 70	Malaysia
Nikkon	HPS 70W	Malaysia
Amat Sinar Sdn. Bhd	ASL 70S	Malaysia
Tridonic	OGLIS 70W	South Africa
ATCO	-	Australia
REFAS	RB70HS4A-P	Malaysia

3.8.2 SON Ballast, 150W

Manufacturer	Type/Catalogue/ Model No.	Country of Manufacture
SE Everlast Sdn. Bhd.	SONLL 150W (LL-Low Loss)	Malaysia
SOLEX	DLS 150	Malaysia
ATCO	OSM 150.00	Australia
Nikkon	HPS 150W	Malaysia
Philip (M)	BSN 150W	Malaysia
Amat Sinar Sdn. Bhd	ASL 150S	Malaysia
Tridonic	OGLIS 150W	South Africa
REFAS	RB150HS4A-P	Malaysia

3.8.3 SON Ballast, 250W

Manufacturer	Type/Catalogue/ Model No.	Country of Manufacture
Philip (M)	BSN 250W	Malaysia
SE Everlast Sdn. Bhd.	SONLL 250W (LL-Low Loss)	Malaysia
SOLEX	DLS 250	Malaysia
Nikkon	HPS 250W	Malaysia
Amat Sinar Sdn. Bhd	ASL 250S	Malaysia
Tridonic	OGLIS 250W	South Africa
ATCO	OG250	Australia
REFAS	RB250HS4A-P	Malaysia

3.8.4 SON Lamp, 70W with built-in ignitor

Manufacturer	Type/Catalogue/ Model No.	Country of Manufacture
OSRAM	NAV-E 70W/I	Germany
PHILIPS	SON-E 70W/I	China
EYE Iwasaki	NH 70F/I	Japan

3.8.5 SON Lamp, 150W

Manufacturer	Type/Catalogue/ Model No.	Country of Manufacture
OSRAM	NAV-T 150W	Germany
PHILIPS	SON-T 150W	China
EYE Iwasaki	NHT 150	Japan

3.8.6 SON Lamp, 250W

Manufacturer	Type/Catalogue/ Model No.	Country of Manufacture
OSRAM	NAV-T 250W	Germany
PHILIPS	SON-T 250W	China
EYE Iwasaki	NHT 250	Japan

3.8.7 SON Ignitor

Manufacturer	Type/Catalogue/ Model No.	Country of Manufacture
Amat Sinar Sdn. Bhd.	S1-2P	Malaysia
BAG Turgi Electronic	Type N1 400NE	Switzerland
EVERLAST	SN1540C-T 70-400W	Malaysia
PHILIPS	SU-70400L	Belgium
THORN	ZRM4 5ES/B2-02	Australia
REFAS by EITA Tech.	FCD-G400t ₂	Malaysia
NIKKON	SP9008T	Malaysia

3.8.8 SON Lantern, 70W

Manufacturer	Type/Catalogue/ Model No.	Country of Manufacture
Amat Sinar Sdn. Bhd.	ASL AL 70W	Malaysia
PHILIPS (M)	SRX 066/70WI	Malaysia
SCHREDER	Z1	Malaysia
NIKKON	S419-150/70W	Malaysia

3.8.9 SON Lantern, 150W

Manufacturer	Type/Catalogue/ Model No.	Country of Manufacture
Amat Sinar Sdn. Bhd.	ASL AL 150W	Malaysia
SCHREDER	Z2	Malaysia
NIKKON	S419-150/150W	Malaysia
THORN Lighting (Tianjin) Co.	Alpha 2000 (150W)	China
Note:		
(a) The THORN Street Lighting Lantern shall incorporate a detachable point for unplugging and a set of appropriate control fuse for maintenance and safety purposes.		

3.8.10 SON Lantern, 250W

Manufacturer	Type/Catalogue/ Model No.	Country of Manufacture
Amat Sinar Sdn. Bhd.	ASL AL 250W	Malaysia
SCHREDER	Z2	Malaysia
NIKKON	S419-250/250W	Malaysia
THORN Lighting (Tianjin) Co. Ltd.	Alpha 2000 (250W)	China
Note:		
(a) The THORN Street Lighting Lantern shall incorporate a detachable point for unplugging and a set of appropriate control fuse for maintenance and safety purposes.		

3.8.11 Photo Sensor (Photocell)

Manufacturer	Type/Catalogue/ Model No.	Country of Manufacture
KAGA, INC	SELCON AS-2406A	Japan
LUMINA	-	Japan
Note:		
(a) The product shall comply with the requirements as follows: - Switch ON less than 30 LUX & Switch OFF more than 150 LUX - Shall be designed to fail in the "OFF" position.		

3.8.12 Street Lighting Cutout

Manufacturer	Type/Catalogue/ Model No.	Country of Manufacture
LUCY	MCO 40 SL	U.K.

3.8.13 Street Lighting Bracket

Manufacturer	Type/Catalogue/ Model No.	Country of Manufacture
GVE Metal Sdn Bhd Kuching.	-	Malaysia
Note:		
(a) Until the plant possesses the capability of hot-dip galvanising work to a length greater than 5 ft in a single dip, the galvanising plant to which the plant outsourced to shall be indicated to us in writing.		
(b) The plant shall continue to strive to upgrade itself with necessary machineries and expand the plant in order to store the raw material in proper condition.		
(c) To work out a quality assurance system which ensures the product quality is at least maintained or continuously improved.		
Sarwaja Timur Sdn Bhd, Kuching	-	Malaysia
KKB Engineering Bhd, Kuching	-	Malaysia

3.8.14 Street Lighting Column

Manufacturer	Type/Catalogue/ Model No.	Country of Manufacture
Sarwaja Timur Sdn Bhd, Kuching	-	Malaysia
KKB Engineering Bhd, Kuching	-	Malaysia
Lysaght Galvanised Steel Bhd, Perak	-	Malaysia
Galvapole Industries Sdn Bhd	-	Malaysia

3.8.15 80A Triple Pole Magnetic Contactor

Manufacturer	Type/Catalogue/ Model No.	Country of Manufacture
Taian-Jaya Electric Sdn Bhd	C-50L-240V	Malaysia

3.9 **Surge or Lightning Arrester**

3.9.1 LV Lightning Arrester, 440V, 10 kA

Manufacturer	Type/Catalogue/ Model No.	Country of Manufacture
ABB	LOVOS	Poland
Raychem/Tyco	LVA-440	Germany

3.9.2 11 kV Lightning Arrester, 10 kV, 10 kA

Manufacturer	Type/Catalogue/ Model No.	Country of Manufacture
ABB	POLIM-D	Switzerland
Cooper Power System	UHS 1005	U.S.A.
HUBBEL/OHIO BRASS	PDV-100	U.S.A.

3.9.3 33 kV Lightning Arrester, 36 kV, 10 kA

Manufacturer	Type/Catalogue/ Model No.	Country of Manufacture
ABB	MWK Type 29	Switzerland
Cooper Power System	UHS 3613 (AZL1B36R)	U.S.A.
HUBBEL/OHIO BRASS	PDV-100	U.S.A.

4.0 MISCELLANEOUS EQUIPMENT

4.1 Cable Connectors

4.1.1 LV Copper Cable Lug, Crimping Type.

Manufacturer	Type/Catalogue/ Model No.	Country of Manufacture
Conway Terminals Manufacture Sdn Bhd., Selangor	Size (mm²): 10, 16, 35, 95, 185, 240, 300 & 630.	Malaysia
Supreme & Company, West Bengal.	Size (mm²): 10, 16, 35, 95, 185, 240, 300 & 630.	India
Utilux	Size (mm²): 10, 16, 35, 95, 185, 240, 300 & 630	Australia
Cembre	Size (mm²): 10, 16, 35, 95, 185, 240, 300 & 630.	Italy
Cabac	Size (mm²): 10, 16, 35, 95, 185, 240, 300 & 630.	Australia

4.1.2 LV Copper Ferrule, Crimping Type

Manufacturer	Type/Catalogue/ Model No.	Country of Manufacture
Conway Terminals Manufacture Sdn Bhd., Selangor	Size (mm²): 16, 35, 95, 185, 300 & 630.	Malaysia
Supreme & Company, West Bengal.	Size (mm²): 16, 35, 95, 185, 300 & 630.	India
Utilux	Size (mm²): 16, 35, 95, 185, 300 & 630.	Australia
Cembre	Size (mm²): 16, 35, 95, 185, 300 & 630.	Italy
Cabac	Size (mm²): 16, 35, 95, 185, 300 & 630.	Australia

4.1.3 HV Bi-metallic Crimping Type Lugs (Class A)

Manufacturer	Type/Catalogue/ Model No.	Country of Manufacture
Mosdorfer CCL System Ltd.	Size (mm²): 35, 95 & 185	England
Utilux	Size (mm²): 35, 95 & 185	Australia
Cembre	Size (mm²): 35, 95 & 185	Italy
Cabac	Size (mm²): 35, 95 & 185	Australia
Note: Class A connectors are subjected to short-circuit test in accordance with IEC 61238-1.		

4.1.4 HV Aluminium Ferrule, Crimping Type (Class A)

Manufacturer	Type/Catalogue/ Model No.	Country of Manufacture
Mosdorfer CCL System Ltd.	Size (mm²): 35, 50, 95, 185, 240, 300 & 630	England
Utilux	Size (mm²): 35, 50, 95, 185, 240, 300 & 630	Australia
Cembre	Size (mm²): 35, 50, 95, 185, 240, 300 & 630	Italy
Cabac	Size (mm²): 35, 50, 95, 185, 240, 300 & 630	Australia
Note: Class A connectors are subjected to short-circuit test in accordance with IEC 61238-1.		

4.1.5 HV Copper Ferrule, Crimping type (Class A)

Manufacturer	Type/Catalogue/ Model No.	Country of Manufacture
Mosdorfer CCL System Ltd.	Size (mm²): 300, 630 & 800	England
Utilux	Size (mm²): 300, 630 & 800	Australia
Cembre	Size (mm²): 300, 630 & 800	Italy

Manufacturer	Type/Catalogue/ Model No.	Country of Manufacture
Cabac	Size (mm²): 300, 630 & 800	Australia
Note: Class A connectors are subjected to short-circuit test in accordance with IEC 61238-1.		

4.2 Earthing Accessories

4.2.1 Earthing Rod – 16 mm x 1830 mm (5/8” x 6’)

Manufacturer	Type/Catalogue/ Model No.	Country of Manufacture
Juan Kuang Electrical Accessories Manufacturer Sdn Bhd	-	Malaysia
TAIPOLY Industries Sdn Bhd	-	Malaysia
Note: (a) Both ends of the rod shall be threaded with one end tapered.		

4.3 Fuses

4.3.1 Single Pole House Service Cutout with or without HRC Fuse (60A/100A)

Manufacturer	Type/Catalogue/ Model No.	Country of Manufacture
W.Lucy & Co.Ltd.	2286AL & ME60A HRC Fuse (60A) 2286AK & ME100A HRC Fuse (100A)	U.K.
WT Henley Ltd.	Series 7 Type IIa (60A) Series 7 Type IIb (100A)	U.K.
Lucy Switchgear	MK4 60A & 100A	China
Note: House Service cut out only		

4.3.2 Fuse link/Cartridge fuse for Service Cut Out

Manufacturer	Type/Catalogue/ Model No.	Country of Manufacture
W. Lucy	2286AL, ME60A & ME100A	U.K.
WT Henley	Series 7 Type II	U.K.
Lawson	ME/MF 60/100A	U.K.
Cooper Bussmann	60LR85 & 100LR85	India
Fusegear (Conway Terminal)	FK-FRH (up to 60A)	Malaysia

4.3.3 100A Neutral Link (5-Way Connector Box)

Manufacturer	Type/Catalogue/ Model No.	Country of Manufacture
Juan Kuang Electrical Accessories Manufacturer Sdn Bhd	JK-555	Malaysia
W.Lucy & Co.Ltd.	List MLNS	U.K.
WT Henley Ltd.	Type II - 54347	U.K.
PLK Electrical Accessories Manufacturer Sdn Bhd	NSL	Malaysia

4.3.4 200A Outdoor Dividing Box for 4C 95 mm² cable (Outdoor Service Intake)

Manufacturer	Type/Catalogue/ Model No.	Country of Manufacture
W.Lucy & Co.Ltd.	List 14018A / 11515	U.K.

4.3.5 400A Outdoor Dividing Box for 4C 185 mm² cable (Outdoor Service Intake)

Manufacturer	Type/Catalogue/ Model No.	Country of Manufacture
W.Lucy & Co.Ltd.	List No.14022 / 9212	U.K.

4.3.6 Insulated Pole-mounted Cutout, 400A

Manufacturer	Type/Catalogue/ Model No.	Country of Manufacture
WT Henley Ltd.	54611-18	U.K.
W.Lucy & Co.Ltd.	MPC 400	U.K.

4.3.7 Intake Unit, 4C 95 & 185 mm² Cable (Indoor Service Intake)

Manufacturer	Type/Catalogue/ Model No.	Country of Manufacture
W.Lucy & Co.Ltd.	List No. 50029D/ 4E150X3 & List 14018/11515	U.K.

4.3.8 LV HRC Fuse Link, Type JP, 40A to 400A

Manufacturer	Type/Catalogue/ Model No.	Country of Manufacture
BUSSMANN	MJ30-8 MJ30-7	U.K.
FG Electric (M) Sdn.Bhd.	Fusegear Electric FNJ Fusegear Electric FMJ	Malaysia
Lawson Fuse Ltd.	-	U.K.

4.3.9 LV DIN Fuse Link, 63A,100A & 200A

Manufacturer	Type/Catalogue/ Model No.	Country of Manufacture
BUSSMANN	NH 000 / NH 00 NH 2	U.K./India
JEAN MULLER	NH 00 NH 2	Germany Slovenia France
SIBA	NH 00 NH 2	Germany

4.3.10 Type K Fuse Link, 11 kV, 5A to 100A

Manufacturer	Type/Catalogue/ Model No.	Country of Manufacture
BUSSMANN	15KBR	U.K./India
ABB	Type K	Australia
Cable & Power Supplies	FL8K	South Africa
Hawker Siddeley	Type K	U.K.
S & C Electric Company	Type K Positrol	U.S.A

4.3.11 Type K Fuse Link, 33 kV, 1A to 100A

Manufacturer	Type/Catalogue/ Model No.	Country of Manufacture
BUSSMANN	46KBR	U.K./India
ABB	Type K	Australia
Brush & Switchgear	Type K	U.K.
Cable & Power Supplies	FL16K	South Africa
Hawker Siddeley	Type K	U.K.

4.3.12 11 kV Din Fuse Link (Air Type) 16A to 160A

Manufacturer	Type/Catalogue/ Model No.	Country of Manufacture
SIBA	Air Type	Germany
Electricas SA (Mesa)	Fusarc CF 12	Spain
BUSSMANN	12TDLSJ	U.K./India

4.3.13 HV Oil-tight HRC Fuse with Striker Pin, 16A to 125A

Manufacturer	Type/Catalogue/ Model No.	Country of Manufacture
BUSSMANN	Type F01 & Type F02	U.K./India
SIBA	Type F01 & Type F02	Germany

4.4 Insulating oil

4.4.1 Transformer Oil

Manufacturer	Type/Catalogue/ Model No.	Country of Manufacture
Nynas	NYTRO Gemini X	Sweden
SHELL	Diala BX	Malaysia

4.5 Safety Belt

4.5.1 Pole Strap

Manufacturer	Type/Catalogue/ Model No.	Country of Manufacture
SWELOCK	Art No. 600	Sweden

4.5.2 Safety Belt

Manufacturer	Type/Catalogue/ Model No.	Country of Manufacture
SWELOCK	Art No. 520	Sweden (Korea)

4.6 **Safety Glove**

4.6.1 Leather Protector Gloves (Class 0/2)

Manufacturer	Type/Catalogue/ Model No.	Country of Manufacture
VOLTGARD / NORTH	ILP-3S	U.S.A
W.H.Salisbury & Co.	156-4, 9 Leather Protector	U.S.A

4.6.2 Rubber Glove

Manufacturer	Type/Catalogue/ Model No.	Country of Manufacture
VOLTGARD / NORTH	E-014B, E-416B	U.S.A
W.H.Salisbury & Co.	E-214B, 40-16B CL 4 T1 16" BLK	U.S.A

4.7 **Safety Helmet**

4.7.1 Safety Helmet Wide Brim c/w Chin-Strap, Polycarbonate

Manufacturer	Type/Catalogue/ Model No.	Country of Manufacture
PROTECTOR	HC 53 & HC 63	Australia

4.8 **Earth Fault Indicator**

4.8.1 Earth Fault Indicator for Underground Cables

Manufacturer	Type/Catalogue/ Model No.	Country of Manufacture
Elektro-Mechanik GmbH	EASI-R/EASI-A	Germany
Schneider	Flair 279	France

4.8.2 Earth Fault Indicator for Overhead Line

Manufacturer	Type/Catalogue/ Model No.	Country of Manufacture
Schneider	Flite 110 SA	France