


JAYA CEM		DATA TEKNIS PROYEK							Nomor : Halaman : Tanggal :	
KADRAT OPS		TRANSPORTASI								
NAMA PROYEK		: LRT JABODEBEK								
PEMLIK		: Direktorat Jenderal Perkereta Arian								
JENIS PROYEK		: Struktur Elevated								
LOKASI		: Line -1 (Cawang - Cibubur)								
PERIODE PELAKSANAAN		: 2015 - 2019 , perancangan waktu sd 2021								
NO	Description	Service Line -1 (Cawang- Cibubur)					Standard Code	Remark		
		Brand & Type	Volume	Capacity	Unit					
7	Power Supply of Traction Power Substation (TPSS)	Brand	Type	Quantity	Capacity	Unit	Standard Code	Remark		
Material of MV Switchgear Panel 20 KV :										
- Incoming MV Switchgear Panel 20 KV (DS & CB + Metering)	:	ABB	Safe Ring / Safe Plus (Gas Insulated)	4	630 , 24 kV, 20 kA	set	i) Metal Enclosed Switchgear : IEC 62271 -200, ii) General Purpose Switches : IEC 60265-1, iii) Disconnectors and Earthing Switches : 62271-102, iv) Switch/Fuse Combination : IEC 62271-105, v) Circuit Breakers : IEC 62271-100 & vi) Common Clouses : IEC 60694	Type Cubicle : Modular		
- Outgoing interconnection TPSS MV Switchgear Panel 20 KV	:	ABB	Safe Ring/Safe Plus (Gas Insulated)	15	630 A, 24 kV, 20 kA	set	i) Metal Enclosed Switchgear : IEC 62271 -200, ii) General Purpose Switches : IEC 60265-1, iii) Disconnectors and Earthing Switches : 62271-102, iv) Switch/Fuse Combination : IEC 62271-105, v) Circuit Breakers : IEC 62271-100 & vi) Common Clouses : IEC 60694	Type Cubicle : Modular		
- Outgoing Traction Transformer MV Switchgear Panel 20 KV	:	ABB	Safe Ring /Safe Plus (Gas Insulated)	9	630 A, 24 kV, 20 kA	set	i) Metal Enclosed Switchgear : IEC 62271 -200, ii) General Purpose Switches : IEC 60265-1, iii) Disconnectors and Earthing Switches : 62271-102, iv) Switch/Fuse Combination : IEC 62271-105, v) Circuit Breakers : IEC 62271-100 & vi) Common Clouses : IEC 60694	Type Cubicle : Modular		
- Outgoing Auxiliary Transformer MV Switchgear Panel 20 KV (FLBS)	:	ABB	Safe Ring/Safe Plus (Gas Insulated)	7	200 A, 24 kV, LBS Fuse	set	i) Metal Enclosed Switchgear : IEC 62271 -200, ii) General Purpose Switches : IEC 60265-1, iii) Disconnectors and Earthing Switches : 62271-102, iv) Switch/Fuse Combination : IEC 62271-105, v) Circuit Breakers : IEC 62271-100 & vi) Common Clouses : IEC 60694	Type Cubicle : Modular		
- Outgoing interconnection DSS MV Switchgear Panel 20 KV (LBS)	:	ABB	Safe Ring / Safe Plus , Type F	-	630 A, 24 kV, 20 kA	set	i) Metal Encosed Switchgear : IEC 62271 -200, ii) General Purpose Switches : IEC 60265-1, iii) Switches : 62271-102, iv) Switch/Fuse Combination : IEC 62271-105, v) Breakers : IEC 62271-100 & vi) Common Clouses : IEC 60694	Type Cubicle : Modular		
- Surge Arrester for MV Switchgear	:	ABB	Polimer	24	20 kA, 26 kV	set	IEC 62271 / IEC 60265	Indoor LA		
Material of Transformer										
- Traction Transformer 20kV/2x20.59 kV ,3300 kVA	:	LSIS	Cast Resin Dry (AN)	9	3300 kVA	set	i) Railway Application, Fixed Installation Traction Transformer : EN 60329, ii) Semiconductor Converters General Requirements and Line Commutated Convertors : EN 60146, & iii) Dry-Type Transformer : IEC 60076-11	Installation Indoor , Air Natural System		
- Auxiliary Transformer 20 kVA, 20.0, 38 kV TPSS	:	Trafindo / Fortune	Cast Resin Dry (AN)	3	20 kVA	set	IEC 60076-11	indoor of installation		
- Auxiliary Transformer 100 kVA 20.0, 38 kV TPSS/DSS	:	Trafindo / Fortune	Cast Resin Dry (AN)	4	100 kVA	set	IEC 60076-11	indoor of installation		
- Auxiliary Transformer 400 kVA 20.0, 38 kV OCC	:	Trafindo / Fortune	Cast Resin Dry (AN)	-	400 kVA	set	IEC 60076-11	indoor of installation		
Material of LV System										
- Panel Distribusi Type Wall mounted LV 20 kVA	:	Schneider	Type of Cubicle Shall Be Free Standing With Indoor Type and Metal Sheet Enclosed	3	20 kVA, 380 Volt	set	i) Standar of Voltages : IEC 60038, ii) Vocabulary : IEC 60050, iii) Insulation Co-Ordination : IEC 60071, iv) Electrical Relays, v) Semi Conductor Converters : IEC 60146, vi) Low Voltages Fuses, vii) Electrical Installation of Buildings : IEC 60364 & vii), Degrees of Protection Provided Enclosures (IP Code)			
- Panel Distribusi Type Free Standing LV 100 kVA	:	Schneider	Type of Cubicle Shall Be Free Standing With Indoor Type and Metal Sheet Enclosed	4	100 kVA, 380 Volt	set	i) Standar of Voltages : IEC 60038, ii) Vocabulary : IEC 60050, iii) Insulation Co-Ordination : IEC 60071, iv) Electrical Relays, v) Semi Conductor Converters : IEC 60146, vi) Low Voltages Fuses, vii) Electrical Installation of Buildings : IEC 60364 & vii), Degrees of Protection Provided Enclosures (IP Code)			
- Panel Distribusi Type Free Standing LV OCC	:	Schneider	Type of Cubicle Shall Be Free Standing With Indoor Type and Metal Sheet Enclosed	-	400 kVA, 380 Volt	set	i) Standar of Voltages : IEC 60038, ii) Vocabulary : IEC 60050, iii) Insulation Co-Ordination : IEC 60071, iv) Electrical Relays, v) Semi Conductor Converters : IEC 60146, vi) Low Voltages Fuses, vii) Electrical Installation of Buildings : IEC 60364 & vii), Degrees of Protection Provided Enclosures (IP Code)			
- Automatic Change Over Switch 100 kVA	:	Schneider	Type of Cubicle Shall Be Free Standing With Indoor Type and Metal Sheet Enclosed	4	100 kVA,380 Volt	set	i) Standar of Voltages : IEC 60038, ii) Vocabulary : IEC 60050, iii) Insulation Co-Ordination : IEC 60071, iv) Electrical Relays, v) Semi Conductor Converters : IEC 60146, vi) Low Voltages Fuses, vii) Electrical Installation of Buildings : IEC 60364 & vii), Degrees of Protection Provided Enclosures (IP Code)			
- Automatic Change Over Switch 400 kVA OCC	:	Schneider	Type of Cubicle Shall Be Free Standing With Indoor Type and Metal Sheet Enclosed	-	400 kVA, 380 Volt	set	i) Standar of Voltages : IEC 60038, ii) Vocabulary : IEC 60050, iii) Insulation Co-Ordination : IEC 60071, iv) Electrical Relays, v) Semi Conductor Converters : IEC 60146, vi) Low Voltages Fuses, vii) Electrical Installation of Buildings : IEC 60364 & vii), Degrees of Protection Provided Enclosures (IP Code)			
Material of Backup System										
- Industrial UPS 40 kVA complete with 2 hours back up battery	:	Vertiv	Double Conversion True On Line UPS-System	4	40 kVA	set	IEC 62040-3			
- Industrial UPS 100 kVA complete with 2 hours back up battery	:	Vertiv	Double Conversion True On Line UPS-System	-	100 kVA	set	IEC 62040-3			
- Generator Set capacity 50 kVA, complete with local panel control	:	Engine Cummins & Generator Stamford	Silent	4	50 kVA	set				
- Generator set capacity 100 kVA, complete with local panel control	:	Engine Cummins & Generator Stamford	Silent	-	100 kVA	set				
- Generator set capacity 300 kVA, complete with local panel control OCC	:	Engine Cummins & Generator Stamford	Silent	-	300 kVA	set				
- Batteries & charger for DC 110 Volt source and DC Switchboard 110 VDC	:	Vertiv	Battery Type : V-FT, 12 V 100FC, Charger Type : 6 Pulse, Thyristor	7	25 Ampere	set	IEC60896-21/22,UL 1989, UL 94			
Material of Rectifier & DC System										
- Rectifier 1.2 kVAC/750 VDC, 3000 kW, 12 Pulse	:	Secheron	Np + 1 ,Number of Pulse, Modular Fixed Indoor (CB type MBS 500 , Metal Clad)	9	3000 kW, 4000 A & 750 Volt-DC	set	i) IEC 60146 : Semiconductor, ii) IEC 60146-1, Part 1-1 : Specification of Basic Requirements, iii) 60747 : Semiconductor Devices iv) EN 60328 : Railway Applications - Electronic Power Converters for Substation			
- Incoming DC Switchgear 750 VDC Panel (HSCB)	:	Secheron	HSCB UR40E-81S/ SEPCOS2	9	3000 kW, 4000 A & 750 Volt-DC	set	i) EN: 50123 / IEC 61992 Part 1: General, Part 2: Circuit Breakers, Part 3:Indoor DC Disconnector, Part 4:Outdoor DC Switch Disconnector, Part 5: Surge Arrester, Part 6: DC Switchgear Assemblies, Part 7:Measurement, Control & Protection			
- Outgoing DC Switchgear 750 VDC Panel (HSCB)	:	Secheron	HSCB UR40E-81S/ SEPCOS2, MBS 500	37	2600 A, 750 VDC	set	i) EN: 50123 / IEC 61992 Part 1: General, Part 2: Circuit Breakers, Part 3:Indoor DC Disconnector, Part 4:Outdoor DC Switch Disconnector, Part 5: Surge Arrester, Part 6: DC Switchgear Assemblies, Part 7:Measurement, Control & Protection			
- Negative Panel	:	Secheron	LBR	9	4000 A , 750 Volt-DC	set	i) EN: 50123 / IEC 61992 Part 1: General, Part 2: Circuit Breakers, Part 3:Indoor DC Disconnector, Part 4:Outdoor DC Switch Disconnector, Part 5: Surge Arrester, Part 6: DC Switchgear Assemblies, Part 7:Measurement, Control & Protection			
- Lightning arrester for DC Switchgear	:	Siemens	3EB2-010	46	1000 VDC	set	i) EN: 50123 / IEC 61992 Part 1: General, Part 2: Circuit Breakers, Part 3:Indoor DC Disconnector, Part 4:Outdoor DC Switch Disconnector, Part 5: Surge Arrester, Part 6: DC Switchgear Assemblies, Part 7:Measurement, Control & Protection			
- PLC Panel/Control cubicle	:	Siemens	SIMATIC IPC277E (NANOPANEL PC)	7	32 BIT	set	i) EN 61000-6-4 : Emitted Interference, ii) EN 61000-6-2 : Immunity Immunity			
- DS for outgoing to third rail & support	:	Secheron	SW-type	88	4000 A , 750 Volt-DC	set	i) EN: 50123 / IEC 61992 Part 1: General, Part 2: Circuit Breakers, Part 3:Indoor DC Disconnector, Part 4:Outdoor DC Switch Disconnector, Part 5: Surge Arrester, Part 6: DC Switchgear Assemblies, Part 7:Measurement, Control & Protection			
- Linked Break Device/ intertripping system	:	Secheron	Switch Type DS	7	4000 A , 750 Volt-DC	set	i) EN: 50123 / IEC 61992 Part 1: General, Part 2: Circuit Breakers, Part 3:Indoor DC Disconnector, Part 4:Outdoor DC Switch Disconnector, Part 5: Surge Arrester, Part 6: DC Switchgear Assemblies, Part 7:Measurement, Control & Protection			
- Voltage Limiting Device	:	Secheron	V Guard-H	7	Thermal Nominal Current : 1000 A	set	i) EN: 50526-2 : voltage limiting device of classes 3 and 4, EN 50122-1 : Protective provision about Electrical Safety in VLD-F, VLD-O or Both Functions.			
- Blue Light Station	:	Secheron	LBS 130 Wall Mounted	16	-	set	i) EN: 50123 / IEC 61992 Part 1: General, Part 2: Circuit Breakers, Part 3:Indoor DC Disconnector, Part 4:Outdoor DC Switch Disconnector, Part 5: Surge Arrester, Part 6: DC Switchgear Assemblies, Part 7:Measurement, Control & Protection	Push Button		
- Track Bypass switch	:	Secheron	House inside a polyester cabinet, motorized	16	4000 A, 750 Volt-DC	set	i) EN: 50123 / IEC 61992 Part 1: General, Part 2: Circuit Breakers, Part 3:Indoor DC Disconnector, Part 4:Outdoor DC Switch Disconnector, Part 5: Surge Arrester, Part 6: DC Switchgear Assemblies, Part 7:Measurement, Control & Protection			
Material of Cable										
- Cable interkoneksi TPSS 20 kV, XLPE Insulation	:	Voksel	NZXSEBY , 3Cx185 mm-sqr	15982	453 A, 20 kV	m	SPL 43-5-46, IEC 60502 - 2 : Copper conductor <XLPE Isolated Copper Tape Scream, PVC Inner Sheathed, Double Steel Tape Armor,PVC Sheathed			
- Cable interkoneksi DSS 20 kV, XLPE Insulation	:	Voksel	NZXSEBY , 3Cx50 mm-sqr	-	205 A, 20 kV	m	SPL 43-5-46, IEC 60502 - 2 : Copper conductor <XLPE Isolated Copper Tape Scream, PVC Inner Sheathed, Double Steel Tape Armor,PVC Sheathed			
- Embeded Bracket, cable tray/ladder & accessories	:	Jordahl, Hibi		15982		m				
- Control Cable	:	Voksel	FO & Wire	7		lot				
- Cable 20kV (Cu 3x95mmsq) XLPE dari Switchgear 20kV ke RTR	:	Voksel	NZXSEBY , 3Cx 95 mm-sqr	640	307A, 20 kV	m	SPL 43-5-46, IEC 60502 - 2 : Copper conductor ,XLPE Isolated Copper Tape Scream, PVC Inner Sheathed, Double Steel Tape Armor,PVC Sheathed			
- Cable DC, 1 x Cu 300 mm2	:	Voksel	NZXY	20580		m				
- Cable Power tegangan rendah TPSS/DSS	:	Voksel	NY	7		lot				
- Cable Power tegangan rendah OCC	:	Voksel	NY	-		lot				
Material of Earthing & bonding										
- Grounding for TPSS	:	Furse	Bare Copper Wire & Rod Copper	7	20 kA	lot		System Grip Loop Plus Rod Copper Deep		
- Wayside structure Earthing & Bonding	:	Voksel	Bare Copper Wire & Rod Copper	29600	20 kA	m		System Grip Reinforced Concrete Plus Rod Deep		
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BIRO ENGINEERING		DATA TEKNIS PROYEK							Nomor : Halaman : Tanggal :	
		TRANSPORTASI								
NAMA PROYEK		LRT JABODEBEK								
PEMLIK		Direktorat Jenderal Perkereta Aplan								
JENIS PROYEK		Struktur Elevated								
LOKASI		Line -2 (Cawang - Dukuh Atas)								
PERIODE PELAKSANAAN		2015 - 2019 , perpanjangan waktu sd 2021								
NO	Description	Service Line -2 (Cawang- Cibubur)					Standard Code	Remark		
		Brand & Type	Volume	Capacity	Unit					
7	Power Supply of Traction Power Substation (TPSS)	Brand	Type	Quantity	Capacity	Unit	Standard Code	Remark		
Material of MV Switchgear Panel 20 KV :										
- Incoming MV Switchgear Panel 20 KV (DS & CB + Metering)	:	ABB	Safe Ring / Safe Plus (Gas Insulated)	2	630, 24 kV, 20 kA	set	i) Metal Enclosed Switchgear : IEC 62271 -200, ii) General Purpose Switches : IEC 60265-1, iii) Disconnectors and Earthing Switches : 62271-102, iv) Switch Fuse Combination : IEC 62271-105, v) Circuit Breakers : IEC 62271-100 & vi) Common Closures : IEC 60694	Type Cubicle : Modular for installation		
- Outgoing interconnection TPSS MV Switchgear Panel 20 KV	:	ABB	Safe Ring/Safe Plus (Gas Insulated)	12	630 A, 24 kV, 20 kA	set	i) Metal Enclosed Switchgear : IEC 62271 -200, ii) General Purpose Switches : IEC 60265-1, iii) Disconnectors and Earthing Switches : 62271-102, iv) Switch Fuse Combination : IEC 62271-105, v) Circuit Breakers : IEC 62271-100 & vi) Common Closures : IEC 60694	Type Cubicle : Modular for installation		
- Outgoing Traction Transformer MV Switchgear Panel 20 KV	:	ABB	Safe Ring /Safe Plus (Gas Insulated)	10	630 A, 24 kV, 20 kA	set	i) Metal Enclosed Switchgear : IEC 62271 -200, ii) General Purpose Switches : IEC 60265-1, iii) Disconnectors and Earthing Switches : 62271-102, iv) Switch Fuse Combination : IEC 62271-105, v) Circuit Breakers : IEC 62271-100 & vi) Common Closures : IEC 60694	Type Cubicle : Modular for installation		
- Outgoing Auxiliary Transformer MV Switchgear Panel 20 KV (FLBS)	:	ABB	Safe Ring / Safe Plus, Type F	7	200 A, 24 kV, LBS Fuse	set	i) Metal Enclosed Switchgear : IEC 62271 -200, ii) General Purpose Switches : IEC 60265-1, iii) Disconnectors and Earthing Switches : 62271-102, iv) Switch Fuse Combination : IEC 62271-105, v) Circuit Breakers : IEC 62271-100 & vi) Common Closures : IEC 60694	Type Cubicle : Modular		
- Outgoing interconnection DSS MV Switchgear Panel 20 KV (LBS)	:	ABB	Safe Ring / Safe Plus,	4	630 A, 24 kV, 20 kA	set	i) Metal Enclosed Switchgear : IEC 62271 -200, ii) General Purpose Switches : IEC 60265-1, iii) Switches : 62271-102, iv) Switch Fuse Combination : IEC 62271-105, v) Breakers : IEC 62271-100 & vi) Common Closures : IEC 60694	Type Cubicle : Modular		
- Surge Arrester for MV Switchgear	:	ABB	Polimer	26	20 kA, 26 kV	set	IEC 62271 / IEC 60265	Indoor LA		
Material of Transformer										
- Traction Transformer 20kV/2x0.59 kV ,3300 kVA	:	LSIS	Cast Resin Dry (AN)	10	3300 kVA	set	i) Railway Application, Fixed Installation Traction Transformer : EN 50329, ii) Semiconductor Convertors General Requirements and Line Commutated Convertors : EN 60146, & iii) Dry-Type Transformer : IEC 60076-11	Installation Indoor , Air Natural System		
- Auxiliary Transformer 20 kVA, 20.0.38 kV TPSS	:	Trafindo / Fortune	Cast Resin Dry (AN)	-	20 kVA	set	IEC 60076-11	Indoor		
- Auxiliary Transformer 100 kVA 20.0.38 kV TPSS/DSS	:	Trafindo / Fortune	Cast Resin Dry (AN)	7	100 kVA	set	IEC 60076-11	Indoor		
- Auxiliary Transformer 400 kVA 20.0.38 kV OCC	:	Trafindo / Fortune	Cast Resin Dry (AN)	-	400 kVA	set	IEC 60076-11	Indoor		
Material of LV System										
- Panel Distribusi Type Wall mounted LV 20 kVA	:	Schneider	Type of Cubicle Shall Be Free Standing With Indoor Type and Metal Sheet Enclosed	-	20 kVA, 380 Volt	set	i) Standar of Voltages : IEC 60038, ii) Vocabulary : IEC 60050, iii) Insulation Co-Ordination : IEC 60071, iv) Electrical Relays, v) Semi Conductor Converters : IEC 60146, vi) Low Voltages Fuses, vii) Electrical Installation of Buildings : IEC 60364 & viii) Degrees of Protection Provided Enclosures (IP Code)			
- Panel Distribusi Type Free Standing LV 100 kVA	:	Schneider	Type of Cubicle Shall Be Free Standing With Indoor Type and Metal Sheet Enclosed	7	100 kVA, 380 Volt	set	i) Standar of Voltages : IEC 60038, ii) Vocabulary : IEC 60050, iii) Insulation Co-Ordination : IEC 60071, iv) Electrical Relays, v) Semi Conductor Converters : IEC 60146, vi) Low Voltages Fuses, vii) Electrical Installation of Buildings : IEC 60364 & viii) Degrees of Protection Provided Enclosures (IP Code)			
- Panel Distribusi Type Free Standing LV OCC	:	Schneider	Type of Cubicle Shall Be Free Standing With Indoor Type and Metal Sheet Enclosed	-	400 kVA, 380 Volt	set	i) Standar of Voltages : IEC 60038, ii) Vocabulary : IEC 60050, iii) Insulation Co-Ordination : IEC 60071, iv) Electrical Relays, v) Semi Conductor Converters : IEC 60146, vi) Low Voltages Fuses, vii) Electrical Installation of Buildings : IEC 60364 & viii) Degrees of Protection Provided Enclosures (IP Code)			
- Automatic Change Over Switch 100 kVA	:	Schneider	Type of Cubicle Shall Be Free Standing With Indoor Type and Metal Sheet Enclosed	7	100 kVA,380 Volt	set	i) Standar of Voltages : IEC 60038, ii) Vocabulary : IEC 60050, iii) Insulation Co-Ordination : IEC 60071, iv) Electrical Relays, v) Semi Conductor Converters : IEC 60146, vi) Low Voltages Fuses, vii) Electrical Installation of Buildings : IEC 60364 & viii) Degrees of Protection Provided Enclosures (IP Code)			
- Automatic Change Over Switch 400 kVA OCC	:	Schneider	Type of Cubicle Shall Be Free Standing With Indoor Type and Metal Sheet Enclosed	-	400 kVA, 380 Volt	set	i) Standar of Voltages : IEC 60038, ii) Vocabulary : IEC 60050, iii) Insulation Co-Ordination : IEC 60071, iv) Electrical Relays, v) Semi Conductor Converters : IEC 60146, vi) Low Voltages Fuses, vii) Electrical Installation of Buildings : IEC 60364 & viii) Degrees of Protection Provided Enclosures (IP Code)			
Material of Backup System										
- Industrial UPS 40 kVA complete with 2 hours back up battery	:	Vertiv	Double Conversion True On Line UPS-System	7	40 kVA	set	IEC 62040-3			
- Industrial UPS 100 kVA complete with 2 hours back up battery	:	Vertiv	Double Conversion True On Line UPS-System	-	100 kVA	set	IEC 62040-3			
- Generator set capacity 50 kVA, complete with local panel control	:	Engine Cummins & Generator Stamford	Silent	6	50 kVA	set				
- Generator set capacity 100 kVA, complete with local panel control	:	Engine Cummins & Generator Stamford	Silent	1	100 kVA	set				
- Generator set capacity 300 kVA, complete with local panel control OCC	:	Engine Cummins & Generator Stamford	Silent	-	300 kVA	set				
- Batteries & charger for DC 110 Volt source and DC Switchboard 110 VDC	:	Vertiv	Battery Type : V-FT, 12 V 100FC, Charger Type : 6 Pulse, Thyristor	7	25 Ampere	set	IEC60896-21/22,UL 1989, UL 94			
Material of Rectifier & DC System										
- Rectifier 1.2 kVAC/750 VDC, 3000 kW, 12 Pulse	:	Secheron	Np + 1 ,Number of Pulse, Modular Fixed Indoor (CB type MBS 500 , Metal Cist)	10	3000 kW, 4000 A &750 Volt-DC	set	i) IEC 60146 : Semiconductor, ii) IEC 60146-1, Part 1-1 : Specification of Basic Requirements, iii) 60747 : Semiconductor Devices iv) EN 60328 : Railway Applications - Electronic Power Converters for Substation			
- Incoming DC Switchgear 750 VDC Panel (HSCB)	:	Secheron	HSCB UR40E-81S/ SEPCOS2	10	3000 kW, 4000 A &750 Volt-DC	set	i) EN: 50123 / IEC 61992 Part 1: General, Part 2: Circuit Breakers, Part 3:Indoor DC Disconnector, Part 4:Outdoor DC Switch Disconnector, Part 5: Surge Arrester, Part 6: DC Switchgear Assemblies, Part 7:Measurement, Control & Protection			
- Outgoing DC Switchgear 750 VDC Panel (HSCB)	:	Secheron	HSCB UR40E-81S/ SEPCOS2, MBS 500	25	2600 A, 750 VDC	set	i) EN: 50123 / IEC 61992 Part 1: General, Part 2: Circuit Breakers, Part 3:Indoor DC Disconnector, Part 4:Outdoor DC Switch Disconnector, Part 5: Surge Arrester, Part 6: DC Switchgear Assemblies, Part 7:Measurement, Control & Protection			
- Negative Panel	:	Secheron	LBR	10	4000 A , 750 Volt-DC	set	i) EN: 50123 / IEC 61992 Part 1: General, Part 2: Circuit Breakers, Part 3:Indoor DC Disconnector, Part 4:Outdoor DC Switch Disconnector, Part 5: Surge Arrester, Part 6: DC Switchgear Assemblies, Part 7:Measurement, Control & Protection			
- Lightning arrester for DC Switchgear	:	Siemens	3EB2-010	35	1000 VDC	set	i) EN: 50123 / IEC 61992 Part 1: General, Part 2: Circuit Breakers, Part 3:Indoor DC Disconnector, Part 4:Outdoor DC Switch Disconnector, Part 5: Surge Arrester, Part 6: DC Switchgear Assemblies, Part 7:Measurement, Control & Protection			
- PLC Panel/Control cubicle	:	Siemens	SIMATIC IPC277E (NANOPANEL PC)	5	32 BIT	set	i) EN 61000-6-4 : Emitted Interference, ii) EN 61000-6-2 : Interference Immunity			
- DS for outgoing to third rail & support	:	Secheron	SW -type	40	4000 A , 750 Volt-DC	set	i) EN: 50123 / IEC 61992 Part 1: General, Part 2: Circuit Breakers, Part 3:Indoor DC Disconnector, Part 4:Outdoor DC Switch Disconnector, Part 5: Surge Arrester, Part 6: DC Switchgear Assemblies, Part 7:Measurement, Control & Protection			
- Linked Break Device/ intertripping system	:	Secheron	Switch Type DS	5	4000 A , 750 Volt-DC	set	i) EN: 50123 / IEC 61992 Part 1: General, Part 2: Circuit Breakers, Part 3:Indoor DC Disconnector, Part 4:Outdoor DC Switch Disconnector, Part 5: Surge Arrester, Part 6: DC Switchgear Assemblies, Part 7:Measurement, Control & Protection			
- Voltage Limiting Device	:	Secheron	V Guard-H	5	Thermal Nominal Current : 1000 A	set	i) EN: 50526-2 : voltage limiting device of classes 3 and 4, EN 50122-1 : Protective provision about Electrical Safety in VLD-F, VLD-O or Both Funtions.			
- Blue Light Station	:	Secheron	LBS 130 Wall Mounted	16	-	set	i) EN: 50123 / IEC 61992 Part 1: General, Part 2: Circuit Breakers, Part 3:Indoor DC Disconnector, Part 4:Outdoor DC Switch Disconnector, Part 5: Surge Arrester, Part 6: DC Switchgear Assemblies, Part 7:Measurement, Control & Protection	Push Button		
- Track Bypass switch	:	Secheron	House inside a polyester cabinet, motorized	10	4000 A, 750 Volt-DC	set	i) EN: 50123 / IEC 61992 Part 1: General, Part 2: Circuit Breakers, Part 3:Indoor DC Disconnector, Part 4:Outdoor DC Switch Disconnector, Part 5: Surge Arrester, Part 6: DC Switchgear Assemblies, Part 7:Measurement, Control & Protection			
Material of Cable										
- Cable interkoneksi TPSS 20 kV, XLPE Insulation	:	Sutrado	NX2SEBY , 3Cx185 mm-sqr	11.110	453 A, 20 kV	m	SPL 43-5-46, IEC 60502 - 2 : Copper conductor <XLPE Isolated Copper Tape Screen, PVC Inner Sheathed, Double Steel Tape Armor,PVC Sheathed			
- Cable interkoneksi DSS 20 kV, XLPE Insulation	:	Sutrado	NX2SEBY , 3Cx50 mm-sqr	4.546	205 A, 20 kV	m	SPL 43-5-46, IEC 60502 - 2 : Copper conductor <XLPE Isolated Copper Tape Screen, PVC Inner Sheathed, Double Steel Tape Armor,PVC Sheathed			
- Embeded Bracket, cable tray/ladder & accessories	:	Jordahl Hill		11.110		m				
- Control Cable	:	Sutrado	FO & Wire type	7		lot				
- Cable 20kV (Cu 3x95mmsq) XLPE dari Switchgear 20kV ke RTR	:	Sutrado	NX2SEBY , 3Cx 95 mm-sqr	800	307A, 20 kV	m	SPL 43-5-46, IEC 60502 - 2 : Copper conductor ,XLPE Isolated Copper Tape Screen, PVC Inner Sheathed, Double Steel Tape Armor,PVC Sheathed			
- Cable DC, 1 x Cu 300 mm2	:	Sutrado	N2XY	20.000		m				
- Cable Power tegangan rendah TPSS/DSS	:	Sutrado	NYN	7		lot				
- Cable Power tegangan rendah OCC	:	Sutrado	NYN	-		lot				
Material of Earthing & bonding										
- Grounding for TPSS	:	Furue	Barc Copper Wire & Rod Copper	5	20 kA	lot		System Grip Loop Plus Rod Copper Deep system only, reinforcement concrete has poor		
- Wayside structure Earthing & Bonding	:	Sutrado	Barc Copper Wire & Rod Copper	21.600	20 kA	m		200mm		

JAYA CM		DATA TEKNIS PROYEK						Nomor : Halaman : Tanggal :	
BIRO ENGINEERING		TRANSPORTASI							
NAMA PROYEK		LRT JABODEBEK							
PEMLIK		Direktorat Jenderal Perkereta Arian							
JENIS PROYEK		Struktur Elevated							
LOKASI		Line -3 (Cawang - Bekasi Timur)							
PERIODE PELAKSANAAN		2015 - 2019 , perancangan waktu sd 2021							
NO	Description	Service Line -3 (Cawang- Cibubur)				Standard Code		Remark	
		Brand & Type	Type	Volume	Capacity	Unit			
7	Power Supply of Traction Power Substation (TPSS)	Brand	Type	Quantity	Capacity	Unit	Standard Code		Remark
Material of MV Switchgear Panel 20 KV :									
- Incoming MV Switchgear Panel 20 KV (DS & CB + Metering)	:	ABB	Safe Ring / Safe Plus (Gas Insulated)	4	630 A, 24 kV, 20 kA	set	i) Metal Enclosed Switchgear : IEC 62271 -200, ii) General Purpose Switches : IEC 60265-1, iii) Disconnectors and Earthing Switches : 62271-102, iv) Switch Fuse Combination : IEC 62271-105, v) Circuit Breakers : IEC 62271-100 & vi) Common Clouses : IEC 60694		Type Cubicle : Modular
- Outgoing interconnection TPSS MV Switchgear Panel 20 KV	:	ABB	Safe Ring/Safe Plus (Gas Insulated)	22	630 A, 24 kV, 20 kA	set	i) Metal Enclosed Switchgear : IEC 62271 -200, ii) General Purpose Switches : IEC 60265-1, iii) Disconnectors and Earthing Switches : 62271-102, iv) Switch Fuse Combination : IEC 62271-105, v) Circuit Breakers : IEC 62271-100 & vi) Common Clouses : IEC 60694		Type Cubicle : Modular
- Outgoing Traction Transformer MV Switchgear Panel 20 KV	:	ABB	Safe Ring /Safe Plus (Gas Insulated)	9	630 A, 24 kV, 20 kA	set	i)Metal Enclosed Switchgear : IEC 62271 -200, ii) General Purpose Switches : IEC 60265-1, iii) Disconnectors and Earthing Switches : 62271-102, iv) Switch Fuse Combination : IEC 62271-105, v) Circuit Breakers : IEC 62271-100 & vi) Common Clouses : IEC 60694		Type Cubicle : Modular
- Outgoing Auxiliary Transformer MV Switchgear Panel 20 KV (FLBS)	:	ABB	Safe Ring/Safe Plus (Gas Insulated)	11	200 A, 24 kV, LBS Fuse	set	i) Metal Enclosed Switchgear : IEC 62271 -200, ii) General Purpose Switches : IEC 60265-1, iii) Disconnectors and Earthing Switches : 62271-102, iv) Switch Fuse Combination : IEC 62271-105, v) Circuit Breakers : IEC 62271-100 & vi) Common Clouses : IEC 60694		Type Cubicle : Modular
- Outgoing interconnection DSS MV Switchgear Panel 20 KV (LBS)	:	ABB	Safe Ring / Safe Plus, Type F	6	630 A, 24 kV, 20 kA	set	i)Metal Encosed Switchgear : IEC 62271 -200, ii) General Purpose Switches : IEC 60265-1, iii) Switches : 62271-102, iv) Switch Fuse Combination : IEC 62271-105, v) Breakers : IEC 62271-100 & vi) Common Clouses : IEC 60694		Type Cubicle : Modular
- Surge Arrester for MV Switchgear	:	ABB	Polimer	36	20 kA, 26 kV	set	IEC 62271 / IEC 60265		Indoor LA
Material of Transformer									
- Traction Transformer 20kV/2x0.59 kV ,3300 kVA	:	LSIS	Cast Resin Dry (AN)	9	3300 kVA	set	i) Railway Application, Fixed Installation Traction Transformer : EN 60329, ii) Semiconductor Convertors General Remenments and Line Commutated Convertors : EN 60146, & iii) Dry-Type Transformer : IEC 60076-11		Installation indoor , Air Natural System
- Auxiliary Transformer 20 kVA, 20.0.38 kV TPSS	:	Trafidno / Fortune	Cast Resin Dry (AN)	6	20 kVA	set	IEC 60076-11		
- Auxiliary Transformer 100 kVA 20.0.38 kV TPSS/DSS	:	Trafidno / Fortune	Cast Resin Dry (AN)	5	100 kVA	set	IEC 60076-11		
- Auxiliary Transformer 400 kVA 20.0.38 kV OCC	:	Trafidno / Fortune	Cast Resin Dry (AN)	1	400 kVA	set	IEC 60076-11		
Material of LV System									
- Panel Distribusi Type Wall mounted LV 20 kVA	:	Schneider	Type of Cubicle Shall Be Free Standing With Indoor Type and Metal Sheet Enclosed	6	20 kVA, 380 Volt	set	i) Standar of Voltages : IEC 60038, ii) Vocabulary : IEC 60050, iii) Insulation Co-Ordination : IEC 60071, iv) Electrical Relays, v) Semi Conductor Converters : IEC 60146, vi) Low Voltages Fuses, vii) Electrical Installation of Buildings : IEC 60364 & viii) Degrees of Protection Provided Enclosures (IP Code)		
- Panel Distribusi Type Free Standing LV 100 kVA	:	Schneider	Type of Cubicle Shall Be Free Standing With Indoor Type and Metal Sheet Enclosed	5	100 kVA, 380 Volt	set	i) Standar of Voltages : IEC 60038, ii) Vocabulary : IEC 60050, iii) Insulation Co-Ordination : IEC 60071, iv) Electrical Relays, v) Semi Conductor Converters : IEC 60146, vi) Low Voltages Fuses, vii) Electrical Installation of Buildings : IEC 60364 & viii) Degrees of Protection Provided Enclosures (IP Code)		
- Panel Distribusi Type Free Standing LV OCC	:	Schneider	Type of Cubicle Shall Be Free Standing With Indoor Type and Metal Sheet Enclosed	1	400 kVA, 380 Volt	set	i) Standar of Voltages : IEC 60038, ii) Vocabulary : IEC 60050, iii) Insulation Co-Ordination : IEC 60071, iv) Electrical Relays, v) Semi Conductor Converters : IEC 60146, vi) Low Voltages Fuses, vii) Electrical Installation of Buildings : IEC 60364 & viii) Degrees of Protection Provided Enclosures (IP Code)		
- Automatic Change Over Switch 100 kVA	:	Schneider	Type of Cubicle Shall Be Free Standing With Indoor Type and Metal Sheet Enclosed	5	100 kVA,380 Volt	set	i) Standar of Voltages : IEC 60038, ii) Vocabulary : IEC 60050, iii) Insulation Co-Ordination : IEC 60071, iv) Electrical Relays, v) Semi Conductor Converters : IEC 60146, vi) Low Voltages Fuses, vii) Electrical Installation of Buildings : IEC 60364 & viii) Degrees of Protection Provided Enclosures (IP Code)		
- Automatic Change Over Switch 400 kVA OCC	:	Schneider	Type of Cubicle Shall Be Free Standing With Indoor Type and Metal Sheet Enclosed	1	400 kVA, 380 Volt	set	i) Standar of Voltages : IEC 60038, ii) Vocabulary : IEC 60050, iii) Insulation Co-Ordination : IEC 60071, iv) Electrical Relays, v) Semi Conductor Converters : IEC 60146, vi) Low Voltages Fuses, vii) Electrical Installation of Buildings : IEC 60364 & viii) Degrees of Protection Provided Enclosures (IP Code)		
Material of Backup System									
- Industrial UPS 40 kVA complete with 2 hours back up battery	:	Vertiv	Double Conversion True On Line UPS-System	5	40 kVA	set	IEC 62040-3		
- Industrial UPS 100 kVA complete with 2 hours back up battery	:	Vertiv	Double Conversion True On Line UPS-System	1	100 kVA	set	IEC 62040-3		
- Generator Set capacity 50 kVA, complete with local panel control	:	Engine Cummins & Generator Stamford	Silent	5	50 kVA	set			
- Generator set capacity 100 kVA, complete with local panel control	:	Engine Cummins & Generator Stamford	Silent	-	100 kVA	set			
- Generator set capacity 300 kVA, complete with local panel control OCC	:	Engine Cummins & Generator Stamford	Silent	1	300 kVA	set			
- Batteries & charger for DC 110 Volt source and DC Switchboard 110 VDC	:	Vertiv	Battery Type : V-FT, 12 V 100FC, Charger Type : 6 Pulse, Thyristor	12	25 Ampere	set	IEC60896-2/22,UL 1989, UL 94		
Material of Rectifier & DC System									
- Rectifier 1.2 kVAC/750 VDC, 3000 kW, 12 Pulse	:	Secheron	Np + 1 ,Number of Pulse, Modular Fixed Indoor (CB type MBS 500 , Metal Clad)	9	3000 kW, 4000 A &750 Volt-DC	set	i) IEC 60146 : Semiconductor, ii) IEC 60146-1, Part 1-1 : Specification of Basic Requirements, iii) 60747 : Semiconductor Devices iv) EN 60328 : Railway Applications - Electronic Power Converters for Substation		
- Incoming DC Switchgear 750 VDC Panel (HSCB)	:	Secheron	HSCB UR40E-81S/ SEPCOS2	9	3000 kW, 4000 A &750 Volt-DC	set	i) EN: 50123 / IEC 61992 Part 1: General, Part 2: Circuit Breakers, Part 3:Indoor DC Disconnector, Part 4:Outdoor DC Switch Disconnector, Part 5: Surge Arrester, Part 6: DC Switchgear Assemblies, Part 7:Measurement, Control & Protection		
- Outgoing DC Switchgear 750 VDC Panel (HSCB)	:	Secheron	HSCB UR40E-81S/ SEPCOS2, MBS 500	45	2600 A, 750 VDC	set	i) EN: 50123 / IEC 61992 Part 1: General, Part 2: Circuit Breakers, Part 3:Indoor DC Disconnector, Part 4:Outdoor DC Switch Disconnector, Part 5: Surge Arrester, Part 6: DC Switchgear Assemblies, Part 7:Measurement, Control & Protection		
- Negative Panel	:	Secheron	LBR	9	4000 A , 750 Volt-DC	set	i) EN: 50123 / IEC 61992 Part 1: General, Part 2: Circuit Breakers, Part 3:Indoor DC Disconnector, Part 4:Outdoor DC Switch Disconnector, Part 5: Surge Arrester, Part 6: DC Switchgear Assemblies, Part 7:Measurement, Control & Protection		
- Lightning arrester for DC Switchgear	:	Siemens	3EB2-010	54	1000 VDC	set	i) EN: 50123 / IEC 61992 Part 1: General, Part 2: Circuit Breakers, Part 3:Indoor DC Disconnector, Part 4:Outdoor DC Switch Disconnector, Part 5: Surge Arrester, Part 6: DC Switchgear Assemblies, Part 7:Measurement, Control & Protection		
- PLC Panel/Control cubicle	:	Siemens	SIMATIC IPC277E (NANOPANEL PC)	9	32 BIT	set	i) EN 61000-6-4 : Emitted Interference, ii) EN 61000-6-2 : Interference Immunity		
- DS for outgoing to third rail & support	:	Secheron	SW-type	72	4000 A , 750 Volt-DC	set	i) EN: 50123 / IEC 61992 Part 1: General, Part 2: Circuit Breakers, Part 3:Indoor DC Disconnector, Part 4:Outdoor DC Switch Disconnector, Part 5: Surge Arrester, Part 6: DC Switchgear Assemblies, Part 7:Measurement, Control & Protection		
- Linked Break Device/ intertripping system	:	Secheron	Switch Type DS	9	4000 A , 750 Volt-DC	set	i) EN: 50123 / IEC 61992 Part 1: General, Part 2: Circuit Breakers, Part 3:Indoor DC Disconnector, Part 4:Outdoor DC Switch Disconnector, Part 5: Surge Arrester, Part 6: DC Switchgear Assemblies, Part 7:Measurement, Control & Protection		
- Voltage Limiting Device	:	Secheron	V Guard-H	9	Thermal Nominal Current : 1000 A	set	i) EN: 50526-2 : voltage limiting device of classes 3 and 4, EN 50122-1 : Protective provision about Electrical Safety in VLD-F, VLD-O or Both Functions.		
- Blue Light Station	:	Secheron	LBS 130 Wall Mounted	22	-	set	i) EN: 50123 / IEC 61992 Part 1: General, Part 2: Circuit Breakers, Part 3:Indoor DC Disconnector, Part 4:Outdoor DC Switch Disconnector, Part 5: Surge Arrester, Part 6: DC Switchgear Assemblies, Part 7:Measurement, Control & Protection		Push Button
- Track Bypass switch	:	Secheron	House inside a polyester cabinet, motorized	18	4000 A, 750 Volt-DC	set	i) EN: 50123 / IEC 61992 Part 1: General, Part 2: Circuit Breakers, Part 3:Indoor DC Disconnector, Part 4:Outdoor DC Switch Disconnector, Part 5: Surge Arrester, Part 6: DC Switchgear Assemblies, Part 7:Measurement, Control & Protection		
Material of Cable									
- Cable interkoneksi TPSS 20 kV, XLPE Insulation	:	Jembo	NZXSEBY , 3Cx185 mm-sqr	18,922	453 A, 20 kV	m	SPL 43-5-46, IEC 60502 - 2 : Copper conductor <XLPE Isolated Copper Tape Screen, PVC Inner Sheathed, Double Steel Tape Armor,PVC Sheathed		
- Cable interkoneksi DSS 20 kV, XLPE Insulation	:	Jembo	NZXSEBY , 3Cx50 mm-sqr	10,608	205 A, 20 kV	m	SPL 43-5-46, IEC 60502 - 2 : Copper conductor <XLPE Isolated Copper Tape Screen, PVC Inner Sheathed, Double Steel Tape Armor,PVC Sheathed		
- Embeded Bracket, cable tray/ladder & accessories	:	Jordahl Hill		18,922		m			
- Control Cable	:	Jembo	FO & type wire	12		lot			
- Cable 20kV (Cu 3x95mmsq) XLPE dari Switchgear 20kV ke RTR	:	Jembo	NZXSEBY , 3Cx 95 mm-sqr	720	307A, 20 kV	m	SPL 43-5-46, IEC 60502 - 2 : Copper conductor <XLPE Isolated Copper Tape Screen, PVC Inner Sheathed, Double Steel Tape Armor,PVC Sheathed		
- Cable DC, 1 x Cu 300 mm2	:	Jembo	N2XY	22,500		m			
- Cable Power tegangan rendah TPSS/DSS	:	Jembo	NY Y	11		lot			
- Cable Power tegangan rendah OCC	:	Jembo	NY Y	1		lot			
Material of Earthing & bonding									
- Grounding for TPSS	:	Furse	Bare Copper Wire & Rod Copper	9	20 kA	lot			System Grip Loop Plus Rod Copper Deep
- Wayside structure Earthing & Bonding	:	Jembo	Bare Copper Wire & Rod Copper	37,680	20 kA	m			System Grip Reinforced Concrete Plus Rod Deep
-	:								

BIRO ENGINEERING		DATA TEKNIS PROYEK							Nomor :
		TRANSPORTASI							Halaman :
									Tanggal :
NAMA PROYEK		LRT JABODEBEK							
PEMLIK		Direktorat Jenderal Perkereta Aplan							
JENIS PROYEK		Struktur Elevated							
LOKASI		DEPO							
PERIODE PELAKSANAAN		2015 - 2019 , perancangan waktu sd 2021							
NO	Description	Brand & Type		Volume	Capacity	Unit	Standard Code	Remark	
7	Power Supply of Traction Power Substation (TPSS)	Brand	Type	Quantity	Capacity	Unit	Standard Code	Remark	
Material of MV Switchgear Panel 20 KV :									
-	Incoming MV Switchgear Panel 20 KV (DS & CB + Metering)	ABB	Safe Ring / Safe Plus (Gas Insulated)	-	630, 24 kV, 20 kA	set	i) Metal Enclosed Switchgear : IEC 62271 -200, ii) General Purpose Switches : IEC 60265-1, iii) Disconnectors and Earthing Switches : 62271-102, iv) Switch Fuse Combination : IEC 62271-105, v) Circuit Breakers : IEC 62271-100 & vi) Common Clouses : IEC 60694	Type Cubicle : Modular	
-	Outgoing interconnection TPSS MV Switchgear Panel 20 KV	ABB	Safe Ring/Safe Plus (Gas Insulated)	3	630 A, 24 kV, 20 kA	set	i) Metal Enclosed Switchgear : IEC 62271 -200, ii) General Purpose Switches : IEC 60265-1, iii) Disconnectors and Earthing Switches : 62271-102, iv) Switch Fuse Combination : IEC 62271-105, v) Circuit Breakers : IEC 62271-100 & vi) Common Clouses : IEC 60694	Type Cubicle : Modular	
-	Outgoing Traction Transformer MV Switchgear Panel 20 KV	ABB	Safe Ring /Safe Plus (Gas Insulated)	2	630 A, 24 kV, 20 kA	set	i)Metal Enclosed Switchgear : IEC 62271 -200, ii) General Purpose Switches : IEC 60265-1, iii) Disconnectors and Earthing Switches : 62271-102, iv) Switch Fuse Combination : IEC 62271-105, v) Circuit Breakers : IEC 62271-100 & vi) Common Clouses : IEC 60694	Type Cubicle : Modular	
-	Outgoing Auxiliary Transformer MV Switchgear Panel 20 KV (FLBS)	ABB	Safe Ring/Safe Plus (Gas Insulated)	-	200 A, 24 kV, LBS Fuse	set	i) Metal Enclosed Switchgear : IEC 62271 -200, ii) General Purpose Switches : IEC 60265-1, iii) Disconnectors and Earthing Switches : 62271-102, iv) Switch Fuse Combination : IEC 62271-105, v) Circuit Breakers : IEC 62271-100 & vi) Common Clouses : IEC 60694	Type Cubicle : Modular	
-	Outgoing interconnection DSS MV Switchgear Panel 20 KV (LBS)	ABB	Safe Ring / Safe Plus, Type F	-	630 A, 24 kV, 20 kA	set	i)Metal Encosed Switchgear : IEC 62271 -200, ii) General Purpose Switches : IEC 60265-1, iii) Switches : 62271-102, iv) Switch Fuse Combination : IEC 62271-105, v) Breakers : IEC 62271-100 & vi) Common Clouses : IEC 60694	Type Cubicle : Modular	
-	Surge Arrester for MV Switchgear	ABB	Polimer	5	20 kA, 26 kV	set	IEC 62271 / IEC 60265	Indoor LA	
Material of Transformer									
-	Traction Transformer 20kV/2x0.59 kV ,3300 kVA	LSIS	Cast Resin Dry (AN)	2	3300 kVA	set	i) Railway Application, Fixed Installation Traction Transformer : EN 60329, ii) Semiconductor Converters General Requirements and Line Commutated Convertors : EN 60146, & iii) Dry-Type Transformer : IEC 60076-11	Installation Indoor , Air Natural System	
-	Auxiliary Transformer 30 kVA/ 20.0.38 kV TPSS	Trafoindo / Fortune	Cast Resin Dry (AN)	-	20 kVA	set	IEC 60076-11		
-	Auxiliary Transformer 100 kVA/ 20.0.38 kV TPSS/DSS	Trafoindo / Fortune	Cast Resin Dry (AN)	-	100 kVA	set	IEC 60076-11		
-	Auxiliary Transformer 400 kVA/ 20.0.38 kV OCC	Trafoindo / Fortune	Cast Resin Dry (AN)	-	400 kVA	set	IEC 60076-11		
-	Auxiliary Transformer 1600 kVA/ 20.0.38 kV DEPO	Trafoindo / Fortune	Cast Resin Dry (AN)	1	1600 Kva				
Material of LV System									
-	Panel Distribusi 1600 A Type free standing LV DEPO	Schneider	Type of Cubicle Shall Be Free Standing With Indoor Type and Metal Sheet Enclosed	1	1600 A, 380 Volt	set	i) Standar of Voltages : IEC 60038, ii) Vocabulary : IEC 60050, iii) Insulation Co-Ordination : IEC 60071, iv) Electrical Relays, v) Semi Conductor Converters : IEC 60146, vi) Low Voltages Fuses, vii) Electrical Installation of Buildings : IEC 60364 & viii) Degrees of Protection Provided Enclosures (IP Code)		
-	Panel Distribusi 1000 A Type free standing LV DEPO	Schneider	Type of Cubicle Shall Be Free Standing With Indoor Type and Metal Sheet Enclosed	1	1000 A, 380 Volt	set	i) Standar of Voltages : IEC 60038, ii) Vocabulary : IEC 60050, iii) Insulation Co-Ordination : IEC 60071, iv) Electrical Relays, v) Semi Conductor Converters : IEC 60146, vi) Low Voltages Fuses, vii) Electrical Installation of Buildings : IEC 60364 & viii) Degrees of Protection Provided Enclosures (IP Code)		
-	Panel Distribusi 630 A Type free standing LV DEPO	Schneider	Type of Cubicle Shall Be Free Standing With Indoor Type and Metal Sheet Enclosed	1	630 A, 380 V	set	i) Standar of Voltages : IEC 60038, ii) Vocabulary : IEC 60050, iii) Insulation Co-Ordination : IEC 60071, iv) Electrical Relays, v) Semi Conductor Converters : IEC 60146, vi) Low Voltages Fuses, vii) Electrical Installation of Buildings : IEC 60364 & viii) Degrees of Protection Provided Enclosures (IP Code)		
-	Panel Distribusi 250 A Type free standing LV DEPO	Schneider	Type of Cubicle Shall Be Free Standing With Indoor Type and Metal Sheet Enclosed	1	250 A, 380 Volt	set	i) Standar of Voltages : IEC 60038, ii) Vocabulary : IEC 60050, iii) Insulation Co-Ordination : IEC 60071, iv) Electrical Relays, v) Semi Conductor Converters : IEC 60146, vi) Low Voltages Fuses, vii) Electrical Installation of Buildings : IEC 60364 & viii) Degrees of Protection Provided Enclosures (IP Code)		
-	Panel Distribusi 100 A Type free standing LV DEPO	Schneider	Type of Cubicle Shall Be Free Standing With Indoor Type and Metal Sheet Enclosed	1	100 A, 380 Volt	set	i) Standar of Voltages : IEC 60038, ii) Vocabulary : IEC 60050, iii) Insulation Co-Ordination : IEC 60071, iv) Electrical Relays, v) Semi Conductor Converters : IEC 60146, vi) Low Voltages Fuses, vii) Electrical Installation of Buildings : IEC 60364 & viii) Degrees of Protection Provided Enclosures (IP Code)		
-	Automatic Change Over Switch 1600 kVA DEPO	Schneider	Type of Cubicle Shall Be Free Standing With Indoor Type and Metal Sheet Enclosed	1	1600 kVA 380 Volt				
Material of Backup System									
-	Industrial UPS 40 kVA complete with 2 hours back up battery	Vertiv	Double Conversion True On Line UPS-System	1	40 kVA	set	IEC 62040-3		
-	Industrial UPS 100 kVA complete with 2 hours back up battery	Vertiv	Double Conversion True On Line UPS-System	-	100 kVA	set	IEC 62040-3		
-	Generator Set capacity 50 kVA, complete with local panel control	Engine Cummins & Generator Stamford	Silent	-	50 kVA	set			
-	Generator set capacity 100 kVA, complete with local panel control	Engine Cummins & Generator Stamford	Silent	-	100 kVA	set			
-	Generator Set capacity 2000 kVA, complete with local panel control DEPO	Engine Cummins & Generator Stamford	Silent	1	300 kVA	set			
-	Batteries & charger for DC 110 Volt source and DC Switchboard 110 VDC	Vertiv	Battery Type : V-FT, 12 V 100FC, Charger Type : 6 Pulse, Thyristor	1	25 Ampere	set	IEC60896-2/12Z,UL 1989, UL 94		
Material of Rectifier & DC System									
-	Rectifier 1.2 kVAC/750 VDC, 3000 kW, 12 Pulse	Secheron	Np + 1, Number of Pulse, Modular Fixed Indoor (CB type MBS 500, Metal Clad)	2	3000 kW, 4000 A & 750 Volt-DC	set	i) IEC 60146 : Semiconductor, ii) IEC 60146-1, Part 1 : 1 : Specification of Basic Requirements, iii) 60147 : Semiconductor Devices iv) EN 50328 : Railway Applications - Electronic Power Converters for Substation		
-	Incoming DC Switchgear 750 VDC Panel (HSCB)	Secheron	HSCB UR4GE-61S/ SEPCOS2	2	3000 kW, 4000 A & 750 Volt-DC	set	i) EN: 50123 / IEC 61992 Part 1 : General, Part 2: Circuit Breakers, Part 3 Indoor DC Disconnector, Part 4 Outdoor DC Switch Disconnector, Part 5: Surge Arrester, Part 6 : DC Switchgear Assemblies, Part 7:Measurement, Control & Protection		
-	Outgoing DC Switchgear 750 VDC Panel (HSCB)	Secheron	HSCB UR4GE-61S/ SEPCOS2, MBS 500	5	2600 A, 750 VDC	set	i) EN: 50123 / IEC 61992 Part 1 : General, Part 2: Circuit Breakers, Part 3 Indoor DC Disconnector, Part 4 Outdoor DC Switch Disconnector, Part 5: Surge Arrester, Part 6 : DC Switchgear Assemblies, Part 7:Measurement, Control & Protection		
-	Negative Panel	Secheron	LBR	1	4000 A , 750 Volt-DC	set	i) EN: 50123 / IEC 61992 Part 1 : General, Part 2: Circuit Breakers, Part 3 Indoor DC Disconnector, Part 4 Outdoor DC Switch Disconnector, Part 5: Surge Arrester, Part 6 : DC Switchgear Assemblies, Part 7:Measurement, Control & Protection		
-	Lightning arrester for DC Switchgear	Siemens	3EB2-010	6	1000 VDC	set	i) EN: 50123 / IEC 61992 Part 1 : General, Part 2: Circuit Breakers, Part 3 Indoor DC Disconnector, Part 4 Outdoor DC Switch Disconnector, Part 5: Surge Arrester, Part 6 : DC Switchgear Assemblies, Part 7:Measurement, Control & Protection		
-	PLC Panel/Control cubicle	Siemens	SIMATIC IPC277E (NANOPANEL PC)	1	32 BIT	set	i) EN 61000-6-4 : Emitted Interference, ii) EN 61000-6-2 : Interference Immunity		
-	DS for outgoing to third rail & support	Secheron	SW-type	16	4000 A , 750 Volt-DC	set	i) EN: 50123 / IEC 61992 Part 1 : General, Part 2: Circuit Breakers, Part 3 Indoor DC Disconnector, Part 4 Outdoor DC Switch Disconnector, Part 5: Surge Arrester, Part 6 : DC Switchgear Assemblies, Part 7:Measurement, Control & Protection		
-	Linked Break Device/ interrupting system	Secheron	Switch Type DS	1	4000 A, 750 Volt-DC	set	i) EN: 50123 / IEC 61992 Part 1 : General, Part 2: Circuit Breakers, Part 3 Indoor DC Disconnector, Part 4 Outdoor DC Switch Disconnector, Part 5: Surge Arrester, Part 6 : DC Switchgear Assemblies, Part 7:Measurement, Control & Protection		
-	Voltage Limiting Device	Secheron	V Guard-H	1	Thermal Nominal Current : 1000 A	set	i) EN: 50526-2 : voltage limiting device of classes 3 and 4, EN 50122-1 : Protective provision about Electrical Safety in VLD-F, VLD-O or Both Funtions.		
-	Blue Light Station	Secheron	LBS 130 Wall Mounted	16	-	set	i) EN: 50123 / IEC 61992 Part 1 : General, Part 2: Circuit Breakers, Part 3 Indoor DC Disconnector, Part 4 Outdoor DC Switch Disconnector, Part 5: Surge Arrester, Part 6 : DC Switchgear Assemblies, Part 7:Measurement, Control & Protection	Push Button	
-	Track Bypass switch	Secheron	House inside a polyester cabinet, motorized	2	4000 A, 750 Volt-DC	set	i) EN: 50123 / IEC 61992 Part 1 : General, Part 2: Circuit Breakers, Part 3 Indoor DC Disconnector, Part 4 Outdoor DC Switch Disconnector, Part 5: Surge Arrester, Part 6 : DC Switchgear Assemblies, Part 7:Measurement, Control & Protection		
Material of Cable									
-	Cable interkoneksi TPSS 20 kV, XLPE Insulation	Jembo	NX2SEBY, 3Cx185 mm-sqr	3,300	453 A, 20 kV	m	SPL 43-5-46, IEC 60502-2 : Copper conductor >XLPE Insulated Copper Tape Score, PVC Inner Sheathed, Double Steel Tape Armor,PVC Sheathed		
-	Cable interkoneksi DSS 20 kV, XLPE Insulation	Jembo	NX2SEBY , 3Cx50 mm-sqr	1,650	205 A, 20 kV	m	SPL 43-5-46, IEC 60502-2 : Copper conductor >XLPE Insulated Copper Tape Score, PVC Inner Sheathed, Double Steel Tape Armor,PVC Sheathed		
-	Embeded Bracket, cable tray/ladder & accessories	Jordahl, Hilli		3,300		m			
-	Control Cable	Jembo		2		lot			
-	Cable 20kV (Cu 3x95mmsq) XLPE dari Switchgear 20kV ke RTR	Jembo	NX2SEBY, 3Cx 95 mm-sqr	190	307A, 20 kV	m	SPL 43-5-46, IEC 60502-2 : Copper conductor >XLPE Insulated Copper Tape Score, PVC Inner Sheathed, Double Steel Tape Armor,PVC Sheathed		
-	Cable DC, 1 x Cu 300 mm2	Jembo	N2XY	4,000		m			
-	Cable Power tegangan rendah TPSS/DSS	Jembo	NYV	2		lot			
-	Cable Power tegangan rendah OCC	Jembo	NYV	-		lot			
Material of Earthing & bonding									
-	Grounding for TPSS	Furse	Bare Copper Wire & Rod Copper	1	20 kA	lot	Bare Copper Wire & Rod Copper	System Grip Loop Plus Rod Copper Deep	
-	Wayside structure Earthing & Bonding	Jembo	Bare Copper Wire & Rod Copper	3,300	20 kA	m	Bare Copper Wire & Rod Copper	System Grip Reinforced Concrete Plus Rod Deep	


<div><div></div><div>JAYA CM</div></div>		DATA TEKNIS PROYEK						Nomor :
KADIRAT OPS		TRANSPORTASI						Halaman :
								Tanggal :
NAMA PROYEK		: LRT JABODEBEK						
PEMILIK		: Direktorat Jenderal Perkereta Aplan						
JENIS PROYEK		: Struktur Elevated						
LOKASI		: Line-1 (Cawang - Cibubur)						
PERIODE PELAKSANAAN		: 2015 - 2019 , perpanjangan waktu sd 2021						
NO	Description	Service Line -1 (Cawang - Cibubur)						Remark
		Brand & Type		Volume	Capacity	Unit	Standard Code	
8	Third Rail of Conductor Power Supply DC Traction System	Brand	Type	Quantity	Capacity	Unit	Standard Code	Remark
	Material of Power Rail System			-				
	- Conductor Rail	Railtech	Co-Extruded CR	29.896	4000 A, 750 Volt-DC	m	i). ASTM A240 : Standard spication for chromium-nickel stainless steel plate, sheet, and strip for pressure vessels and for general applications. ii). ASTM D495 : Standard test method for high-voltage , low current, dry arc resistance od solid electrical insulation.iii). ASTM B633 : Standard specification for electrodeposited coatings of zinc on iron and steel.iv).IEC 60 : High voltage test techniques. v). EN 10088-2 : Technical delivery conditions for sheet/plate and strip of corrosion resisting steels for general purpose.vi). 60243-1 : Electrical strength of insulating materials- test method. vii). EN 10025 : Hot rolled products of structreal steels. General technical delevary conditions.	Type Cubicle : Modular
	- High Speed Ramp	Railtech	RAS REF 432765	4	4000 A, 750 Volt-DC	pcs	i). ASTM A240 : Standard spication for chromium-nickel stainless steel plate, sheet, and strip for pressure vessels and for general applications. ii). ASTM D495 : Standard test method for high-voltage , low current, dry arc resistance od solid electrical insulation.iii). ASTM B633 : Standard specification for electrodeposited coatings of zinc on iron and steel.iv).IEC 60 : High voltage test techniques. v). EN 10088-2 : Technical delivery conditions for sheet/plate and strip of corrosion resisting steels for general purpose.vi). 60243-1 : Electrical strength of insulating materials- test method. vii). EN 10025 : Hot rolled products of structreal steels. General technical delevary conditions.	
	- Expansion joint	Railtech	RAS REF 432790	1.994	4000 A, 750 Volt-DC	pcs	i). ASTM A240 : Standard spication for chromium-nickel stainless steel plate, sheet, and strip for pressure vessels and for general applications. ii). ASTM D495 : Standard test method for high-voltage , low current, dry arc resistance od solid electrical insulation.iii). ASTM B633 : Standard specification for electrodeposited coatings of zinc on iron and steel.iv).IEC 60 : High voltage test techniques. v). EN 10088-2 : Technical delivery conditions for sheet/plate and strip of corrosion resisting steels for general purpose.vi). 60243-1 : Electrical strength of insulating materials- test method. vii). EN 10025 : Hot rolled products of structreal steels. General technical delevary conditions.	
	- Bracket	Railtech	RAS REF 432635	6.644	-	pcs	i). ASTM B633 : Standard specification for electrodeposited coatings of zinc on iron and steel. v). EN 10088-2 : Technical delivery conditions for sheet/plate and strip of corrosion resisting steels for general purpose.	
	- Insulator	Railtech	RAS REF 432766	6.644	Above Megaohm	pcs	i). ASTM D495 : Standard test method for high-voltage , low current, dry arc resistance od solid electrical insulation.ii). ASTM B633 : Standard specification for electrodeposited coatings of zinc on iron and steel.iii).IEC 60 : High voltage test techniques. .iv). 60243-1 : Electrical strength of insulating materials- test method. v). ISO 50124 : Railway appllcations - insulator coordination.	
	- Cover	Railtech	RAS REF 432766	29.896		m	i). ASTM B633 : Standard specification for electrodeposited coatings of zinc on iron and steel. ii). EN 10088-2 : Technical delivery conditions for sheet/plate and strip of corrosion resisting steels for general purpose.iii). EN 10025 : Hot rolled products of structreal steels. General technical delevary conditions.	For Protection Conductor 3rd
	- Cable terminal of Power Feed Point	Railtech	RAS REF 432766	168	4000 A, 750 Volt-DC	pcs	i). ASTM D495 : Standard test method for high-voltage , low current, dry arc resistance od solid electrical insulation.ii). ASTM B633 : Standard specification for electrodeposited coatings of zinc on iron and steel.iii).IEC 60 : High voltage test techniques. .iv). 60243-1 : Electrical strength of insulating materials- test method. v). ISO 50124 : Railway appllcations - insulator coordination.	Size Cable DC 1Cx400 mm-sqr (12 (1Cx400 mm-sqr at Power Feed Point Conductor Third Rail & 7 (1Cx400 mm-sqr of Track Rail)

 JAYA CM	DATA TEKNIS PROYEK	Nomor : Halaman : Tanggal :
KADIRAT OPS	TRANSPORTASI	


NAMA PROYEK	: LRT JABODEBEK
PEMILIK	: Direktorat Jenderal Perkereta Apian
JENIS PROYEK	: Struktur Elevated
LOKASI	: Line -2 of (Cawang - Dukuh Atas)
PERIODE PELAKSANAAN	: 2015 - 2019 , perpanjangan waktu sd 2021

NO	Description		Service Line -2 of (Cawang - Dukuh Atas)					Remark	
			Brand & Type		Volume	Capacity	Unit		Standard Code
8	Third Rail of Conductor Power Supply DC Traction System		Brand	Type	Quantity	Capacity	Unit	Standard Code	Remark
	Material of Power Rail System	:							
	- Conductor Rail	:	Railtech	Co-Extruded CR	21.816	4000 A, 750 Volt-DC	m	i). ASTM A240 : Standard spication for chromium-nickel stainless steel plate, sheet, and strip for pressure vessels and for general applications. ii). ASTM D495 : Standard test method for high-voltage , low current, dry arc resistance od solid electrical insulation.iii). ASTM B633 : Standard specification for electrodeposited coatings of zinc on iron and steel.iv). IEC 60168-1 : High voltage test techniques. v). EN 10088-2 : Technical delivery conditions for sheet/plate and strip of corrosion resisting steels for general purpose.	
	- High Speed Ramp	:	Railtech	RAS REF 432765	8	4000 A, 750 Volt-DC	pcs	i). ASTM A240 : Standard spication for chromium-nickel stainless steel plate, sheet, and strip for pressure vessels and for general applications. ii). ASTM D495 : Standard test method for high-voltage , low current, dry arc resistance od solid electrical insulation.iii). ASTM B633 : Standard specification for electrodeposited coatings of zinc on iron and steel.iv). IEC 60168-1 : High voltage test techniques. v). EN 10088-2 : Technical delivery conditions for sheet/plate and strip of corrosion resisting steels for general purpose.	
	- Expansion joint	:	Railtech	RAS REF 432790	1.455	4000 A, 750 Volt-DC	pcs	i). ASTM A240 : Standard spication for chromium-nickel stainless steel plate, sheet, and strip for pressure vessels and for general applications. ii). ASTM D495 : Standard test method for high-voltage , low current, dry arc resistance od solid electrical insulation.iii). ASTM B633 : Standard specification for electrodeposited coatings of zinc on iron and steel.iv). IEC 60168-1 : High voltage test techniques. v). EN 10088-2 : Technical delivery conditions for sheet/plate and strip of corrosion resisting steels for general purpose.	
	- Bracket	:	Railtech	RAS REF 432635	4.850	-	pcs	i). ASTM B633 : Standard specification for electrodeposited coatings of zinc on iron and steel. v). EN 10088-2 : Technical delivery conditions for sheet/plate and strip of corrosion resisting steels for general purpose.	
	- Insulator	:	Railtech	RAS REF 432766	4.850	Giga - ohm <	pcs	i). ASTM D495 : Standard test method for high-voltage , low current, dry arc resistance od solid electrical insulation.ii). ASTM B633 : Standard specification for electrodeposited coatings of zinc on iron and steel.iii). IEC 60 : High voltage test techniques. .iv). 60243-1 : Electrical strength of insulating materials- test method. v). ISO 50124 : Railway applications -	
	- Cover	:	Railtech	RAS REF 432766	21.816		m	i). ASTM B633 : Standard specification for electrodeposited coatings of zinc on iron and steel. ii). EN 10088-2 : Technical delivery conditions for sheet/plate and strip of corrosion resisting steels for general purpose.iii). IEC 60168-1 : High voltage test techniques. v). EN 10088-2 : Technical delivery conditions for sheet/plate and strip of corrosion resisting steels for general purpose.	
	- Power Feed point of Cable terminal	:	Railtech	RAS REF 432766	60	4000 A, 750 Volt-DC	pcs	i). ASTM D495 : Standard test method for high-voltage , low current, dry arc resistance od solid electrical insulation.ii). ASTM B633 : Standard specification for electrodeposited coatings of zinc on iron and steel.iii). IEC 60168-1 : High voltage test techniques. v). EN 10088-2 : Technical delivery conditions for sheet/plate and strip of corrosion resisting steels for general purpose.	Size Cable DC 1Cx400 mm-sqr (12 (1Cx400 mm-sqr at Power Feed Point Conductor Third Rail & 7 / 1Cx400 mm-sqr

<div><div></div><div>JAYA CM</div></div>		DATA TEKNIS PROYEK						Nomor :
KADIRAT OPS		TRANSPORTASI						Halaman :
								Tanggal :
NAMA PROYEK		: LRT JABODEBEK						
PEMILIK		: Direktorat Jenderal Perkereta Apian						
JENIS PROYEK		: Struktur Elevated						
LOKASI		: Line -3 (Cawang - Bekasi Timur)						
PERIODE PELAKSANAAN		: 2015 - 2019 , perpanjangan waktu sd 2021						
NO	Description	Service Line -3 of (Cawang - Bekasi Timur)					Remark	
		Brand & Type		Volume	Capacity	Unit		Standard Code
8	Third Rail of Conductor Power Supply DC Traction System	Brand	Type	Quantity	Capacity	Unit	Standard Code	Remark
	Material of Power Rail System	:						
	- Conductor Rail	:	Railtech	Co-Extruded CR	37.976	4000 A, 750 Volt-DC	m	i). ASTM A240 : Standard spication for chromium-nickel stainless steel plate, sheet, and strip for pressure vessels and for general applications. ii). ASTM D495 : Standard test method for high-voltage , low current, dry arc resistance od solid electrical insulation.iii). ASTM B633 : Standard specification for electrodeposited coatings of zinc on iron and steel.iv). IEC 60 : High voltage test techniques. v). EN 10088-2 : Technical delivery conditions for sheet/plate and strip of corrosion resisting steels for general purpose.vi). 60243-1 : Electrical strength of insulating materials- test method. vii). EN 10025 : Hot rolled products of structueal steels. General technical delevery conditions.
	- High Speed Ramp	:	Railtech	Co-Extruded CR	6	4000 A, 750 Volt-DC	pcs	i). ASTM A240 : Standard spication for chromium-nickel stainless steel plate, sheet, and strip for pressure vessels and for general applications. ii). ASTM D495 : Standard test method for high-voltage , low current, dry arc resistance od solid electrical insulation.iii). ASTM B633 : Standard specification for electrodeposited coatings of zinc on iron and steel.iv). IEC 60 : High voltage test techniques. v). EN 10088-2 : Technical delivery conditions for sheet/plate and strip of corrosion resisting steels for general purpose.vi). 60243-1 : Electrical strength of insulating materials- test method. vii). EN 10025 : Hot rolled products of structueal steels. General technical
	- Expansion joint	:	Railtech	RAS REF 432765	2.532	4000 A, 750 Volt-DC	pcs	i). ASTM A240 : Standard spication for chromium-nickel stainless steel plate, sheet, and strip for pressure vessels and for general applications. ii). ASTM D495 : Standard test method for high-voltage , low current, dry arc resistance od solid electrical insulation.iii). ASTM B633 : Standard specification for electrodeposited coatings of zinc on iron and steel.iv). IEC 60 : High voltage test techniques. v). EN 10088-2 : Technical delivery conditions for sheet/plate and strip of corrosion resisting steels for general purpose.vi). 60243-1 : Electrical strength of insulating materials- test method. vii). EN 10025 : Hot rolled products of structueal steels. General technical delevery conditions.
	- Bracket	:	Railtech	RAS REF 432790	8.442	-	pcs	i). ASTM B633 : Standard specification for electrodeposited coatings of zinc on iron and steel. v). EN 10088-2 : Technical delivery conditions for sheet/plate and strip of corrosion resisting steels for general purpose.
	- Insulator	:	Railtech	RAS REF 432635	8.442	Giga - ohm <	pcs	i). ASTM D495 : Standard test method for high-voltage , low current, dry arc resistance od solid electrical insulation.ii). ASTM B633 : Standard specification for electrodeposited coatings of zinc on iron and steel.iii). IEC 60 : High voltage test techniques. .iv). 60243-1 : Electrical strength of insulating materials- test method. v). ISO 50124 : Railway appliccations - insulator coordination.
	- Cover	:	Railtech	RAS REF 432635	37.976	-	m	i). ASTM B633 : Standard specification for electrodeposited coatings of zinc on iron and steel. ii). EN 10088-2 : Technical delivery conditions for sheet/plate and strip of corrosion resisting steels for general purpose.iii). EN 10025 : Hot rolled products of structueal steels. General technical delevery conditions.
	- Cable terminal of Power Feed Point	:	Railtech	RAS REF 432766	216	4000 A, 750 Volt-DC	pcs	i). ASTM D495 : Standard test method for high-voltage , low current, dry arc resistance od solid electrical insulation.ii). ASTM B633 : Standard specification for electrodeposited coatings of zinc on iron and steel.iii). IEC 60 : High voltage test techniques. .iv). 60243-1 : Electrical strength of insulating materials- test method. v). ISO 50124 : Railway appliccations - insulator coordination.
								Size Cable DC 1Cx400 mm-sqr (12 (1Cx400 mm-sqr at Power Feed Point Conductor Third Rail & 7 (1Cx400 mm-sqr of Track Rail)


	DATA TEKNIS PROYEK	Nomor : Halaman : Tanggal :
KADIRAT OPS	TRANSPORTASI	

NAMA PROYEK			: LRT JABODEBEK						
PEMILIK			: Direktorat Jenderal Perkereta Apian						
JENIS PROYEK			: Struktur Elevated						
LOKASI			: DEPO						
PERIODE PELAKSANAAN			: 2015 - 2019 , perpanjangan waktu sd 2021						
NO	Description		Service Line -3 of Depo					Remark	
			Brand & Type		Volume	Capacity	Unit		Standard Code
8	Third Rail of Conductor Power Supply DC Traction System		Brand	Type	Quantity	Capacity	Unit	Standard Code	Remark
	Material of Power Rail System	:							
	- Conductor Rail	:	Railtech	Co-Extruded CR	11.800	4000 A, 750 Volt-DC	m	i). ASTM A240 : Standard spication for chromium-nickel stainless steel plate, sheet, and strip for pressure vessels and for general applications. li). ASTM D495 : Standard test method for high-voltage , low current, dry arc resistance od solid electrical insulation.iii). ASTM B633 : Standard specification for electrodeposited coatings of zinc on iron and steel.iv). IEC 60 : High voltage test techniques. v). EN 10088-2 : Technical	
	- High Speed Ramp	:	Railtech	RAS REF 432765	-	4000 A, 750 Volt-DC	pcs	i). ASTM A240 : Standard spication for chromium-nickel stainless steel plate, sheet, and strip for pressure vessels and for general applications. li). ASTM D495 : Standard test method for high-voltage , low current, dry arc resistance od solid electrical insulation.iii). ASTM B633 : Standard specification for electrodeposited coatings of zinc on iron and steel.iv). IEC 60 : High voltage test techniques. v). EN 10088-2 : Technical	
	- Expansion joint	:	Railtech	RAS REF 432790	788	4000 A, 750 Volt-DC	pcs	i). ASTM A240 : Standard spication for chromium-nickel stainless steel plate, sheet, and strip for pressure vessels and for general applications. li). ASTM D495 : Standard test method for high-voltage , low current, dry arc resistance od solid electrical insulation.iii). ASTM B633 : Standard specification for electrodeposited coatings of zinc on iron and steel.iv). IEC 60 : High voltage test techniques. v). EN 10088-2 : Technical	
	- Bracket	:	Railtech	RAS REF 432635	2.650	-	pcs	i). ASTM B633 : Standard specification for electrodeposited coatings of zinc on iron and steel. v). EN 10088-2 : Technical delivery conditions for sheet/plate and strip of corrosion resisting steels for general purpose.	
	- Insulator	:	Railtech	RAS REF 432766	2.650	Above Megaohm	pcs	i). ASTM D495 : Standard test method for high-voltage , low current, dry arc resistance od solid electrical insulation.ii). ASTM B633 : Standard specification for electrodeposited coatings of zinc on iron and steel.iii). IEC 60 : High voltage test techniques. .iv). 60243-1 : Electrical strength of insulating materials- test method. v). ISO 50124 : Railway appliccations - insulator coordination.	
	- Cover	:	Railtech	RAS REF 432766	11.800		m	i). ASTM B633 : Standard specification for electrodeposited coatings of zinc on iron and steel. ii). EN 10088-2 : Technical delivery conditions for sheet/plate and strip of corrosion resisting steels for general purpose.iii). EN 10025 : Hot rolled products of structural	
	- Power Feed point of Cable terminal	:	Railtech	RAS REF 432766	240	4000 A, 750 Volt-DC	pcs	i). ASTM D495 : Standard test method for high-voltage , low current, dry arc resistance od solid electrical insulation.ii). ASTM B633 : Standard specification for electrodeposited coatings of zinc on iron and steel.iii). IEC 60 : High voltage test techniques. .iv). 60243-1 : Electrical strength of insulating materials- test method. v). ISO 50124 : Railway appliccations - insulator coordination.	Size Cable DC 1Cx400 mm-sqr (12 (1Cx400 mm-sqr at Power Feed Point Conductor Third Rail & 7 (1Cx400 mm-sqr of Track Rail)

<div><div> JAYA CM</div><div>KADIRAT OPS</div></div>		DATA TEKNIS PROYEK					Nomor : Halaman : Tanggal :	
		TRANSPORTASI						
NAMA PROYEK		LRT JABODEBEK						
PEMILIK		Direktorat Jenderal Perkereta Aplan						
JENIS PROYEK		Struktur Elevated						
LOKASI		Cibubur - Cawang - Dukuh Atas - Bekasi Barat						
PERIODE PELAKSANAAN		2015 - 2019 , perpanjangan waktu sd 2021						
NO	DESKRIPSI	CAWANG - CIBUBUR						KETERANGAN
		VOLUME	SATUAN					
9	Scada Sistem	MERK	TYPE	JUMLAH	KAPASITAS	SATUAN	CODE STANDARD	KETERANGAN
	SCADA SISTEM							
	Material of Power and facility For OCC	Siemens		1		Server		Physical 2 server
	-	Dell Tower		7		Server		
	-	Dell CTO		2		Set		
	-							
	-							
	Material of RTU Traction SS	Siemens		22		RTU		Physical 28 RTU
	-	Ruggedcom	RTUswitch	18		set		
	-	Siemens	RTUswitch	6		set		
	-	Siemens	RTU Sicam	20		set		
	-	Siemens	RTU Sicam	24		set		
	-	HP	Printer	8		set		
	Material of RTU Distribution SS	Siemens		7		RTU		Physical 8 RTU
	-							
	-							
	Material of Portable Work Station	Dell		2		Notebook PC		For OCC & BOCC
	-	ServerPowerE		14		Set		
	-	Storage		2		set		
	-	Rack		2		set		
	-							
	Material of Power and facility For Backup OCC	Dell		1		Server		Physical 2 server
	-							
	-							
	Material Spare part Service line 1	Cable		14		Drum		
	-	Cable	STP	43		Roll		
	-	Ruggedcom	Switch	18		Set		
	-							
	Material Spare part service line 2	-						
	-							
	-							
	-							
	Material Spare part service line 3	-						
	-							
	-							
	-							
	Material Instalasi Power and facility SCADA	-						
	-							
	-							
	-							
	Material Instalasi RTU Traction SS	-						
	-							
	-							
	-							
	Material Instalasi RTU Distribution SS	-						
	-							
	-							
	-							
	Tools & Sistem Integrasi Service Line 1	-						
	-							
	-							
	-							
	Tools & Sistem Integrasi Service Line 2	-						
	-							
	-							
	-							
	Tools & Sistem Integrasi Service Line 3	-						
	-							
	-							
	-							
	Tools & Material Training Service Line 1	-						
	-							
	-							
	-							
	Tools & Material Training Service Line 2	-						
	-							
	-							
	-							
	Tools & Material Training Service Line 3	-						
	-							
	-							
	-							

NAMA PROYEK		: LRT JABODEBEK						
PEMILIK		: Direktorat Jenderal Perkereta Api						
JENIS PROYEK		: Struktur Elevated						
LOKASI		: Cibubur - Cawang - Dukuh Atas - Bekasi Barat						
PERIODE PELAKSANAAN		: 2015 - 2019 , perpanjangan waktu sd 2021						
NO	DESKRIPSI	CAWANG - CIBUBUR		JUMLAH	KAPASITAS	SATUAN	CODE STANDARD	KETERANGAN
		VOLUME	SATUAN					
10	Telecommunication	MERK	TYPE					
	TELECOMMUNICATION							
1	Material of Communication Backbone Network Service Line 1	OTN System	MPLS-TP	286		unit		
-	-	XTRAN		39		unit		
-	-	Power Cable			8320	m		
-	-	Grounding Cable			2680	m		
		UTP/STP cables			31500	m		
		FO 48core			30668	m		
		FO 12core			30639	m		
		FO 6 core			33118	m		
		Rack Mounted	FO 48core	16		unit		
		Rack Mounted	FO 12core	16		unit		
		Rack Mounted	FO 6 core	14		unit		
		Cable tray	3m	405		unit		
2	Material of Telephone System Service Line 1	Avaya	Main PABX	3		unit		
-	-		Sub PABX	8		unit		
-	-		IP Phone	200		unit		
-	-							
3	Material of Radio Communication System Service Line 1	Teltronic	RTP300	8		unit		
			Indoor M	4		unit		
			Indoor S	4		unit		
-	-	Antenna Pole	12m	5		unit		
-	-	UPS	Laplace	5		unit		
-	-	Battery UPS		10		unit		
4	Material of Passenger Information Display System Service Line 1	Simpleway	Master Clock	1		unit		
-	-	Simpleway	NTP	2		unit		
-	-	Samsung	Signage	53		unit		
-	-	Samsung	Signage	23		unit		
		Infotec	55" TFT	16		unit		
		Infotec	LED Clock	16		unit		
		Infotec	55" TFT	59		unit		
		Infotec	Analog	59		unit		
		Infotec	Digital	175		unit		
		Infotec	Analog	4		unit		
		Infotec	Digital	5		unit		
5	Material of Clock System Service Line 1	Brandywine	Analog	13		unit		
-	-		Digital	38		unit		
-	-		Double Side	59		unit		
6	Material of CCTV System Service Line 1	BOSCH	Fix Dome	728		unit		
-	-		PTZ Dome	182		unit		
-	-							
7	Material of Public Address System Service Line 1	BOSCH	PowerAmp	25		unit	96	
-	-		SoundP	91		unit	381	
-	-		Loudspeaker	289		unit	1183	
-	-		Noise Cancel	17		unit	55	
8	Material of Intercom System Service Line 1	TVM	Helios2B	41		unit		
-	-		Helios1B	60		unit		
-	-		HeliosE	77		unit		
-	-		Indoor	22		unit		
-	-							
9	Material of Access Control System Service Line 1	BOSCH	Access Reader	212		unit		
-	-		Access Control	64		unit		
-	-		Lock	255		unit		
-	-		Brake Glass	255		unit		
			AlarmModule	23		unit		
10	Material of Fire Alarm System Service Line 1	BOSCH	Main Control	20		unit		
		FPA5000	Display	108		unit		
			Detector	2468		unit		
-	-		Bell	318		unit		
-	-		Strobe	318		unit		
-	-		Manual call	318		unit		
-	-		Keypad	26		unit		
1	Material of Communication Backbone Network Service Line 2	OTN System	MPLS-TP					
-	-	XTRAN						
-	-							
2	Material of Telephone System Service Line 2	Avaya	Main PABX					
-	-		Sub PABX					
-	-		IP Phone					
-	-							
3	Material of Radio Communication System Service Line 2	Teltronic	RTP300					
-	-							
-	-							
-	-							
4	Material of Passenger Information Display System Service Line 2	Simpleway						
-	-							
-	-							
-	-							
5	Material of Clock System Service Line 2	Brandywine						
-	-							
-	-							
-	-							
6	Material of CCTV System Service Line 2	BOSCH						
-	-							
-	-							
-	-							
7	Material of Public Address System Service Line 2	Bosch						
-	-							
-	-							
-	-							
8	Material of Intercom System Service Line 2	TVM	Helios					
-	-		IP Force					
-	-							
-	-							
9	Material of Access Control System Service Line 2	Bosch						
-	-							
-	-							
-	-							
10	Material of Fire Alarm System Service Line 2	Bosch						
-	-							
-	-							


NO	DESKRIPSI	CAWANG - CIBUBUR						KETERANGAN
		VOLUME	SATUAN					
-	-	-	-					
1	Material of Communication Backbone Network Service Line 3	OTN System	MPLS-TP					
-	-	XTRAN						
-	-							
-	-							
2	Material of Telephone System Service Line 3	Avaya	Main PABX					
-	-		Sub PABX					
-	-		IP Phone					
-	-							
3	Material of Radio Communication System Service Line 3	Teltronic	RTP300					
-	-							
-	-							
-	-							
4	Material of Passenger Information Display System Service Line 3	Simpleway						
-	-							
-	-							
-	-							
5	Material of Clock System Service Line 3	Brandywine						
-	-							
-	-							
-	-							
6	Material of CCTV System Service Line 3	BOSCH						
-	-							
-	-							
-	-							
7	Material of Public Address System Service Line 3	Bosch						
-	-							
-	-							
-	-							
8	Material of Intercom System Service Line 3	TVM	Helios					
-	-		IP Force					
-	-							
-	-							
9	Material of Access Control System Service Line 3	Bosch						
-	-							
-	-							
-	-							
10	Material of Fire Alarm System Service Line 3	Bosch						
-	-							
-	-							
-	-							
-	-							

	DATA TEKNIS PROYEK	Nomor : Halaman : Tanggal :
KADIRAT OPS	TRANSPORTASI	

NAMA PROYEK	: LRT JABODEBEK
PEMILIK	: Direktorat Jenderal Perkereta Apian
JENIS PROYEK	: Struktur Elevated
LOKASI	: Cibubur - Cawang - Dukuh Atas - Bekasi Barat
PERIODE PELAKSANAAN	: 2015 - 2019 , perpanjangan waktu sd 2021

NO	DESKRIPSI	CAWANG - CIBUBUR		JUMLAH	KAPASITAS	SATUAN	CODE STANDARD	KETERANGAN
		MERK	TYPE					
11	SIGNALING SYSTEM							
	Material of OCC Signaling System	:						
	- OCC Equipment complete with all accessories	:		1		set		ATS, ATP, maviola, Video wall
	- Backup OCC Equipment complete with all accessories	:		1		set		
	Material of Wayside Signaling System	:						
	- Fixed Balise complete with all accessories	:	Siemens	Trainguard Eurobalises S2 1	612			
	- Euroloop complete with all accessories	:	NA	-	-			
	- Switchable Balise complete with all accessories	:	NA	-	-			
	- Lineside Electronic Unit (LEU) complete with all accessories	:						
	- Axle Counter System Complete with Evaluator and all accessories	:	Siemens	ZP D43	164	set	siemens standart	
	- Signal Head - complete with pole and accessories	:	Siemens	LD160PE	114	set	EN 60529 EN12368 EN600682-27/30/60 EN60259	
	- Signal Head + Shunting - complete with pole and accessories	:						
	- Shunting Aspect - complete with pole and accessories	:						
	- Semboyan 8 E - Shunt Limit Marker	:	local					
	- Semboyan 10 A - Home Signal	:	local	visual	14	unit	PM44	
	- Semboyan 10 G - Station Stop Limit	:	local	visual	16	unit	PM44	
	- Stop Marker complete with all accessories	:	local	visual	2	unit	PM44	
	- Fixed Speed Limit Marker - complete with all accessories	:	local	visual	48	unit	PM44	
	- Electric Point Control System /Point/Switch Machine - complete with all accessories	:	Siemens	BSG9	46	unit		
	- Grounding Material	:		3		set/line	PM44	
	- Signal Head - Cross Aspect	:						
	- access Point	:	Siemens	TGM-A44	215	set	IEEE802.3	
	Material of Station Signaling System	:						
	- Interlocking System for Cawang - Cibubur Line	:	Siemens	Westrack II	4	set	IEC 62280-1	
	- Interlocking System for Cawang - Dukuh Atas Line	:	Siemens	Westrack II	8	set	EB50128	
	- Interlocking System for Cawang - Bekasi Timur Line	:	Siemens	Westrack II	5	set	EN50129	
	- Local Control Workstation complete with all accessories	:	Dell		1	set		
	- Communication System	:	air link		1	set	IEC 60793-1	

[illegible]

			DATA TEKNIS PROYEK					Nomor : Halaman : Tanggal :	
KADIRAT OPS			TRANSPORTASI						
NAMA PROYEK			: LRT JABODEBEK						
PEMILIK			: Direktorat Jenderal Perkereta Apian						
JENIS PROYEK			: Struktur Elevated						
LOKASI			: Cibubur - Cawang - Dukuh Atas - Bekasi Barat						
PERIODE PELAKSANAAN			: 2015 - 2019 , perpanjangan waktu sd 2021						
NO	DESKRIPSI		CAWANG - CIBUBUR						KETERANGAN
			VOLUME	SATUAN					
12	Half Height Platform Screen Door (HHPSD)		MERK	TYPE	JUMLAH	KAPASITAS	SATUAN	CODE STANDARD	KETERANGAN
					Jumlah berdasarkan stasiun				
	Material HALF HEIGHT PLATFORM SCREEN DOOR (HHPSD)		: STE assembling	HHPSD					
	- Material Half Height Platform Screen Door (HHPSD) & Material Grounding Cibubur		:	dedicatedd	17		set		
	-		:						
	-		:						