

**DAFTAR SPESIFIKASI TEKNIS ARSITEKTUR & STRUKTUR
GOR TERPADU KALBAR**

No	Uraian Pekerjaan	Material		
		Bahan	Spesifikasi Yang Di Usulkan	Merk
	PEKERJAAN STRUKTUR DAN ARSITEKTUR			
1	Pekerjaan Beton Praktis	1 Semen PC	Sesuai SNI 15-2049-1994	Semen Gresik, Tiga Roda, Merah Putih atau Holcim/Dynamic.
		2 Pasir	Pasir berbutir dengan kadar lumpur maks.5 %	Lokal
		3 Kerikil / batu pecah	Pecah mesin dimensi maksimal 2 cm	Lokal
		4 Besi beton	Baja tulangan	Krakatau Steel, Interworld Steel, Master Steel
2	Pekerjaan Dinding	1 Bataco press	Ukuran 7x20x40 cm	Press Lokal
		2 Partisi board	Tebal 8 Mm	Jayaboard, Kalsiboard
		3 Rangka Partisi Gypsumboard	Metal Stud	Jayaboard, Kalsiboard
3	Pekerjaan Lantai	1 Homogeneous Tile Lantai	Uk. 60x60 Cm Tipe Polished	Indogress, sierra
			Uk. 60x60 Cm Tipe Unpolished	Indogress, sierra
			Uk. 40x40 Cm Tipe polished	Indogress, sierra, roman
		3 Vinyl Lantai	Heterogeneous rexcourt 4 mm	LG,
		4 Semen Instan	Screeding MU-440	Mortar Utama (MU), Dry Mix, AM
			Perekat Homogeneous	Mortar Utama (MU), Dry Mix, AM
			Waterproofing	Mortar Utama (MU), Dry Mix, AM
	Self Leveling	Mortar Utama (MU), Dry Mix, AM		
5	Pekerjaan Plafond	Gypsumboard	Gypsumboard Tebal 9 Mm	Gyproc, Jayaboard
			GRC board dan Kalboard 4 mm	GRC board, Kalsiboard
6	Pekerjaan Pintu Jendela	1 Kusen Alumunium	Aluminium Profil anodize	Alexindo, Alcomend, YKK, Alcomexindo.
		2 Kusen dan Daun Pintu Baja	Plat Baja	Kuppe, Bostinco, Lion Metal
		3 Kusen dan Daun Pintu Baja Tahan Api	Plat Baja + Bahan tahan api	Kuppe, Bostinco, Lion Metal
		4 Daun Pintu Kaca	Tebal 6 mm, 12 mm Tempered, 8 mm Panasap	Asahimas, Mulia Glass, Tossa Sakti

		5	Aksesoris Untuk Daun Pintu Kayu	Stainless Steel Hairline SUS 304	Dekson, Kuppe, Dorma
		6	Aksesoris Untuk Daun Pintu Baja	Stainless Steel Hairline SUS 304	Dekson, Kuppe, Dorma
7	Pekerjaan Sanitair	1	Closet Duduk		TOTO, American Standard, Roca
		2	Jet Washer		TOTO, American Standard, Roca
		3	Paper Holder		TOTO, American Standard, Roca
		4	Grab Bar		TOTO, American Standard, Roca
		5	Soap Holder		TOTO, American Standard, Roca
		6	Fixed Shower		TOTO, American Standard, Roca
		7	Slob Sink		TOTO, American Standard, Roca
		8	Kran Slob Sink		TOTO, American Standard, Roca
		9	Kitchen Sink		TOTO, American Standard, Roca
		10	Kran Kitchen Sink		TOTO, American Standard, Roca
		11	Counter Top Lavatory		TOTO, American Standard, Roca
		12	Kran Sensor Counter Top Lavatory		TOTO, American Standard, Roca
		13	Wallhung Lavatory		TOTO, American Standard, Roca
		14	Kran Wallhung Lavatory		TOTO, American Standard, Roca
		15	Urinoir		TOTO, American Standard, Roca
		16	Divider Urinal		TOTO, American Standard, Roca
		17	Kaca Cermin		Asahimas, Mulia Glass, Tossa Sakti
		18	Hand Shower		TOTO, American Standard, Roca
		20	Kran		TOTO, American Standard, Roca
		21	Floor Drain		TOTO, American Standard, Roca
8	Pekerjaan Pengecatan	1	Cat Dinding Luar	Cat Tahan Cuaca dan Jamur Jotashield Antifade	Jotun,
		2	Cat Dinding Dalam	Cat interior	Jotun,
		3	Cat Plafond	Cat interior	Jotun,
9	Pekerjaan Lain-Lain	2	Alumunium Composite Panel	Bahan Utama Alloy 3003 PVDF	Seven,
		3	Regular Seating Area type: Diamond 1 piece Middle Backrest	HDPE(5502) Plastic Blow Moulded One-piece Seat Floor mounting, Anti-fire Treatment, Q235	avant

			Connection Pipe, Aluminium Stanchion with Surface powder-coating	
		4 VIP Seating Area type: Merit - mid backSeat Center 550mm individual floor stand mounting	HDPE(5502) Plastic Blow Moulded One-piece Seat Floor mounting, Anti-fire Treatment, Q235 Connection Pipe, Aluminium Stanchion with Surface powder-coating	avant
		5 Telescopic Retractable seating system type: HiLo seating Manual operate	Glossy Blow Moulded Seat with Anti-fire Treatment, Avant Standard Triangle Frame, Q235 Metal Structure with Surface Powder-coating, Step Height:295mm,Step Width:838mm, Freestanding Unit with Rear Railings,	avant

OUTLINE SPESIFIKASI MATERIAL

PEKERJAAN : MEP (MEKANIKAL-ELEKTRIKAL-PLUMBING)

PROYEK : PEMBANGUNAN GEDUNG OLAHRAGA TERPADU

LOKASI : PONTIANAK

TAHUN : 2023

1. LISTRIK ARUS KUAT (LAK)

NO	PEKERJAAN	SPESIFIKASI	MERK
	DISTRIBUSI LISTRIK TEGANGAN MENENGAH		
1	Kubikel Tegangan Menengah (TM) Incoming : LBS + Lightning Arrester	- Switch (LBS) and Earthing Switch - Three-phase busbars - CIT Operating Mechanism - Voltage presence indicator - LSC2A - Connection Pads for Dry-Type Cables - 3 x Lightning Arrester	Schneider Electric, ABB, LS
2	Kubikel Tegangan Menengah (TM) Outgoing : Circuit Breaker + Digital Power Meter	- Fluarc SF1 Circuit Breaker 24 kV ; 16 kA ; 400/630 A - Motorize (geared motor, closing coil, opening coil, anti pumping, aux contact) - Current Transformer ARM3 3 pcs. - Voltage Indicators - Busbar 630 A 3 unit - Heater 50 W, 220 VAC - Shunt Trip 220 VAC 50 Hz - Disconnecter & Earthing Switch with SF6 gas Technology - RI circuit breaker operating Mechanism - CS disconnecter operating Mechanism - Auxiliary Contact on circuit breaker - Downstream Earthing Switch - Voltage Transformer x 3 - Sensor suhu (Easergy TH110) dan kelembaban (Easergy CL110) - Substation monitoring device (Controller dan HMI) - LV Compartment - Powermeter PM5560 (for power management & tele control) - Relay proteksi Easergy P3U30 - (50/51 over current ; 50N/51N ground fault ; 46 unbalance ; & double setting protection) - Control Relay & Comunication Modul : Modicon M221 220Vac (for power management & tele control) - Modul Komunikasi RS485 - Eksternal/Backup Power Supply	Schneider Electric, ABB, LS
3	Kabel Listrik Tegangan Menengah	- Tegangan : 24 KV - Jenis : N2XSY, N2XSEBY - Catatan :	Supreme, Kabel Metal Indonesia, Kabelindo, Sumi indo kabel

		- Kabel Tegangan Menengah Dipersyaratkan Tanpa Sambungan																																																	
4	Terminasi Kabel Listrik Tegangan Menengah	Tegangan : 24 KV, Jenis : Heat Shrink	Raychem, 3M																																																
DISTRIBUSI LISTRIK TEGANGAN RENDAH																																																			
1	Transformator Distribusi	Oil Immersed Transformator, 630 KVA, Cu-Cu, Dyn5	Trafindo, B&D, Weltraf LS																																																
2	Panel Listrik	Panel LVMDP Tipe : Free Standing Form : 2B Bahan : Plat Besi, Finishing : Powder Coating, Tebal Plat : 1,6 mm Panel Distribusi Tipe : Free Standing / Wall Mounted Form : 2B Bahan : Plat Besi, Finishing : Powder Coating, Tebal Plat : 1,6 mm	Aplikator : Omni Electrindo, DJE, TSA, Mulia Makmur																																																
3	Box MCB Listrik	Inbow	Schneider Electric, ABB, LS																																																
4	Kapasitor Bank		Schneider Electric, ABB, Nokian, Epcos																																																
5	AMF Module	Tipe : Digital, Include : Protection Device	Deep Sea, Woodward																																																
6	ATS (Automatic Transfer Switch)	4 Pole	Socomec, Viztro, PTS																																																
7	Relay-relay Proteksi (Control Relay)		Schneider Electric, ABB, LS																																																
8	Digital Power Meter	<table border="1"> <thead> <tr> <th>Spesifikasi</th> <th>LVMDP dan ATS</th> <th>MDP dan SDP</th> <th>Panel lainnya</th> </tr> </thead> <tbody> <tr> <td colspan="4">Kelas Akurasi</td> </tr> <tr> <td>• Arus</td> <td>0.15</td> <td>0.15</td> <td>0.3</td> </tr> <tr> <td>• Tegangan</td> <td>0.1</td> <td>0.1</td> <td>0.3</td> </tr> <tr> <td>• Daya aktif dan reaktif</td> <td>0.2</td> <td>0.2</td> <td>0.5</td> </tr> <tr> <td>• Energi aktif</td> <td>0.2</td> <td>0.2</td> <td>0.5</td> </tr> <tr> <td>• Energi reaktif</td> <td>1</td> <td>1</td> <td>2</td> </tr> <tr> <td>• Sampling rate (samples/cycle)</td> <td>128</td> <td>128</td> <td>32</td> </tr> </tbody> </table>	Spesifikasi	LVMDP dan ATS	MDP dan SDP	Panel lainnya	Kelas Akurasi				• Arus	0.15	0.15	0.3	• Tegangan	0.1	0.1	0.3	• Daya aktif dan reaktif	0.2	0.2	0.5	• Energi aktif	0.2	0.2	0.5	• Energi reaktif	1	1	2	• Sampling rate (samples/cycle)	128	128	32	Schneider Electric, ABB, LS																
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9	Magnetic Contactor		Schneider Electric, ABB, LS																																																
10	DOL Starter, Star Delta Starter		Schneider Electric, ABB, LS																																																
11	Circuit Breaker Panel Listrik	MCCB, MCB	Schneider Electric, ABB, LS																																																
12	Komponen Panel Listrik	Fuse, Pilot Lamp, Surge Arrester, Trafo CT, Ampere Meter, Volt Meter, Selector Switch, Push Button, Sensor Cahaya, Timer	DV,Schneider, LS																																																

13	Kabel Listrik Tegangan Rendah	Tegangan : 0,6/1 kV (NYY, NYFGBY) 300/500 V (NYM, NYMHY, NYAF) 450/750 V (NYA) conductor : copper, Insulation : XLPE, Sheath : PVC, Ampacity : excellent, Max. Short circuit : 250°, Insulation Resistance : excellent, Max.conductor Temp : 90°	Sumi indo kabel, Supreme, Kabel Metal Indonesia, Kabelindo
14	Kabel Listrik Tegangan Rendah	Multicore NYFGBY, NYY	Sumi indo kabel, Supreme, Kabel Metal Indonesia, Kabelindo
15	Kabel Listrik Tegangan Rendah - Tahan Api	FRC	Sumi Indo kabel, pyrotec, JJ lapp, Leony
16	Kabel Grounding	BCC, NYA, NYY	Sumi indo kabel, Supreme, Kabel Metal Indonesia, Kabelindo
17	UPS	Back Up Time : 30 Menit Pada Pembebanan efektif 50% s.d. 60%	DV, Riello, Laplace
RAK KABEL			
1	Rak Kabel	Tipe : Ladder dan Tray, Bahan : Galvanis, Finishing : Powder Coating	TSA, Baruna, NPS
PENERANGAN & STOP KONTAK			
1	Downlight LED Cover Putih Susu 15 Watt	15 Watt (Maximum), 1250 Lumen (Minimum), 5700 - 6500 K	Philips, Opplé, Panasonic, Visicom, artolite
2	Downlight LED Cover Putih Susu 8 Watt	8 Watt (Maximum), 750 Lumen (Minimum), 5700 - 6500 K	Philips, Opplé, Panasonic, Visicom, artolite
3	Lampu Gantung LED 13 Watt	13 Watt (Maximum), 1150 Lumen (Minimum), 3000 - 4000 K	Philips, Opplé, Panasonic, Visicom, artolite
4	Lampu Dinding Recessed Wall Light, LED 5 Watt	5 Watt (Maximum), 327 Lumen (Minimum), 3000 - 4000 K	Philips, Opplé, Panasonic, Visicom, artolite
5	Lampu Spotlight LED 20 Watt	20 Watt (Maximum), 1800 Lumen (Minimum), 3000 - 4000 K	Philips, Opplé, Panasonic, Visicom, artolite
6	Lampu Baret LED	18 Watt (Maximum), 1000 Lumen (Minimum), 6500 K	Philips, Opplé, Panasonic, Visicom, artolite
7	Lampu TL LED, Armatur Recessed Mounted (RM) + Acrylic Cover, 3 x 9 Watt	3 x TL LED 9 Watt, Total Watt : 27 Watt (Maximum), 2400 Lumen (Minimum), 6500 K	Philips, Opplé, Panasonic, Visicom, artolite
8	Recessed LED (Panel Light)	Ukuran : 600 x 600 mm, 43 Watt (Maximum), 4100 Lumen (Minimum), 6500 K	Philips, Opplé, Panasonic, Visicom, artolite
9	Lampu GMS, 1 x TL LED	18 Watt (Maximum), 1600 Lumen (Minimum), 6500 K	Philips, Opplé, Panasonic, Visicom, artolite
10	Lampu Exit, TL LED	10 Watt (Maximum), 800 Lumen (Minimum), 6500 K	Philips, Opplé, Panasonic, Visicom, artolite
11	Lampu Taman, Armatur Tiang Pilar Kotak, Tinggi : 1500 mm	13 Watt (Maximum), 112 Lumen (Minimum), 3000 - 4000 K	Philips, Opplé, Panasonic, Visicom, artolite
12	Lampu Jalan Ganda, 2 x LED 90 Watt	Total Daya : 180 Watt (Maximum), 9700 Lumen (Minimum), 3000 - 4000 K	Philips, Opplé, Panasonic, Visicom, artolite

13	Lampu Arena	LED, 67.200 Lumen, 4000 K,	Philips, Oppl, Panasonic, Visicom, artolite
14	Nicad Battery	Minimal : 2 Jam	YLI, Oppl
15	Saklar	Tipe : Standar	Schneider, Boss, Panasonic
16	Stop Kontak	Tipe : Standar	Schneider, Boss, Panasonic
17	Kabel Instalasi Penerangan	NYA 3x1x2,5 mm2	Supreme, Kabel Metal Indonesia, Kabelindo
18	Kabel Instalasi Stop Kontak	NYA 3x1x2,5 mm2	Supreme, Kabel Metal Indonesia, Kabelindo
19	Pipa Conduit Instalasi	PVC High Impact	Pipa mas, Legrand, Boss, Rifo, Vinilon
20	Cable Mark		CABS, Legrand, 3M
GENSET			
1	Diesel Genset	<p>Set generator lengkap dengan engine, alternator, panel genset dikopel oleh Pabrikan dengan dilampirkan COO dan COM</p> <p>Kapasitas : 650 KVA Prime Power Tipe : Open Pendingin : Radiator Bahan Bakar : Solar</p> <p>Sudah termasuk : - Daily Fuel Tank 400 Liter (Minimal) - Panel Kontrol Starter Genset - Pipa Knalpot, lengkap dengan kotak sampel udara keluaran knalpot</p> <p>Alternator : Output : 650 KVA Prime Power Tegangan : 380 - 415 Volt Frekuensi : 50 Hz Power Factor : 0,8</p>	Genset : Perkins, Cummins Alternator : Stamford
2	Circuit Breaker Panel Listrik	MCCB, MCB	Schneider, ABB, LS
3	Kabel Listrik Tegangan Rendah	Tegangan : 0,6/1 kV (NYY, NYFGBY)	Sumi indo kabel, Supreme, Kabel Metal Indonesia, Kabelindo
4	Ducting Exhaust Radiator Genset	BJLS	Fumira, Kemasu, Lokfom
5	Elastomeric Rubber : Lapisan Ducting Radiator Genset	Elastomeric Rubber	Armaflex, Thermabreak, Thermoshield
6	Aluminium Sheet : Lapisan Ducting Radiator Genset	Double Sided Fire Retardant	Polyfoil, Thermo Foil, Insfoil, Harvifoil
PENYALUR PETIR			
1	Air Terminal	Elektrostatik	EF, Pulsar
2	Down Conductor	Coaxial Tegangan Tinggi 2 x 50 mm2	First, DCE, Heliax
3	Electroda Pembumian	<ul style="list-style-type: none"> - Polymer Inspection Pits / Bak Kontrol - 5/8" Rod Coupling - 5/8" x 2000 mm Extensible Copperbond Rod - Rod cable clamp - 5/8" Drive Stud 	

2. LISTRIK ARUS LEMAH (LAL)

NO	PEKERJAAN	SPEKIFIKASI	MERK
FIRE ALARM			
1	MCFA	Addressable	Notifier, Apron, Protector
2	Remote Booster Power Supplies Expands		Notifier, Apron, Protector

3	Terminal Box	- Bahan : plat baja tebal 1,2 mm - Finishing : cat warna merah	Notifier, Apron, Protector
4	Fixed Heat Temperature Detector - Konvensional	- Tipe : Konvensional - Working Temperature : 55° - 60° C	Notifier, Apron, Protector
5	Photoelectric Smoke Detector - Konvensional	- Tipe : Konvensional	Notifier, Apron, Protector
6	Manual Call Point, Lengkap Dengan Fireman's Intercom Outlet	- Tipe : Manual Push Button	Notifier, Apron, Protector
7	Alarm Bell	- Desibel Rating : 85 dB di jarak 3 meter - Anti Karat	Notifier, Apron, Protector
8	Indicator Lamp		Notifier, Apron, Protector
9	Kabel Instalasi	NYM dan NYA	Supreme, Kabel Metal Indonesia, Kabelindo
10	Pipa Conduit Instalasi	PVC High Impact	Pipa mas, Legrand, Boss, Rifo, Vinilon
11	Cable Mark		CABS, Legrand, 3M
TATA SUARA			
1	Powered Mixer (Analog)	- Tipe : Analog - 16 Channel	TOA, Bosch, Honeywell, Yamaha
2	Equalizer	28 Channel	TOA, Bosch, Honeywell, Yamaha
3	Power Booster Amplifier	Rated Output : 30 Watt, 400 Watt, 800 Watt	TOA, Bosch, Honeywell, Yamaha
4	Dynamic Microphone	Menggunakan Kabel	TOA, Bosch, Honeywell, Yamaha
5	Wireless Microphone		TOA, Bosch, Honeywell, Yamaha
6	Pemutar DVD/Music Player - Radio Tuner	Bisa Menggunakan USB-Flashdisk	TOA, Bosch, Honeywell, Yamaha
7	Universal Speaker	200 Watt, Impedance 8 Ohm, Lengkap Dengan Stand	TOA, Bosch, Honeywell, Yamaha
8	Sub Woofer Speaker	400 Watt, Impedance 8 Ohm	TOA, Bosch, Honeywell, Yamaha
9	Kabel Instalasi	NYMHY	Supreme, Kabel Metal Indonesia, Kabelindo
10	Pipa Conduit Instalasi	PVC High Impact	Pipa mas, Legrand, Boss, Rifo, Vinilon
11	Cable Mark		CABS, Legrand, 3M
12	Rack	Termasuk set power distribution (outlet stop kontak) dan fan	Inдорack, ABBA, TOA
JARINGAN TELEPON			
1	PABX	Tipe : Hybrid	Panasonic, NEC, Transtel
2	Outlet Telepon	Tipe : Flush & Jack	Schneider, Boss, Panasonic
3	Kabel Instalasi Outlet Telepon	ITC 2x2x0,6 mm	Supreme, Belden, Systemax
4	Kabel Antar Terminal Box	ITC Multipair	Supreme, Belden, Systemax
5	Kabel Tanah Jaringan Telepon	Jelly Armoured	Supreme, Belden, Systemax
6	Pipa Conduit Instalasi	PVC High Impact	Pipa mas, Legrand, Boss, Rifo, Vinilon
7	Cable Mark		CABS, Legrand, 3M
JARINGAN DATA, DAN WIFI			
1	Distribution Switch Data	- Switch Layer 2 (Manageable) - Kapasitas : 8 Ports, 16 Ports, 24 Ports, 32 Ports, 48 Ports - Uplink Interfaces : Minimal 2 SFP - Full POE+	Unifi, Mikrotik, Ruijie
2	Outlet Data	RJ45, Kelas Produk : Premium	Simon, Boss, Panasonic, Legrand
3	Wifi Access Point	- Dual Band 2,4 GHz / 5 GHz - 802.11ac - Kecepatan : 300 Mbps - POE (Power Over Ethernet)	Unifi, Mikrotik, Ruijie

4	Kabel Data	UTP Cat.6, STP Cat.6	Belden, Commscope, LS, wonderful hitech
5	Kabel Fiber Optic	UTP Cat.6, STP Cat.6	Belden, Commscope, LS, wonderful hitech
6	Pipa Conduit Instalasi	PVC High Impact	Pipa mas, Legrand, Boss, Rifo, Vinilon
7	Cable Mark		CABS, Legrand, 3M
8	Rack	Termasuk set power distribution (outlet stop kontak) dan fan	Indorack, ABBA
	CCTV		
1	NVR (Network Video Recorder)	<ul style="list-style-type: none"> - Kapasitas : 16 Channel - Video Mode : IP Camera Input (D1, 720p, 1080p) - Screen Mode for Live Display : 1, 4, 8, 16 - Video-Out Monitor : Composite, VGA, & HDMI - Video-Out Resolution : Selectable (800x600 s/d 1920x1080) - Recording Speed : Min. 15 fps per Channel - Recording Modes : Motion, Alarm, Continuous & Scheduled Recording - LAN : Gigabit Ethernet (RJ45) - Front Button, IR Remote Controller, USB Mouse, Keyboard (Option) 	Panasonic, Sony, Hikvision
2	HDD (Hard Disk Drive)	4 TB, Transfer Rate : 150 MB/s	WD, Seagate, Toshiba
3	TV Monitor	32"	LG, Samsung, Sony
4	Switch Data	<ul style="list-style-type: none"> - Switch Layer 2 - Kapasitas : 16 Ports - POE+ - Uplink interfaces : 2 SFP 	Hikvision, Unifi, Mikrotik, Ruijie
5	IP Dome Camera Indoor with Infra Red	<ul style="list-style-type: none"> • 2 Megapixel MOS Sensor • H.264 & MJPEG dual-stream encoding • 25/30fps@1.3 M(1280 × 960) & 25/30fps@720P(1280 × 720) • Day / Night (IR), AWB, AGC, BLC • Max. IR LEDs length 20 m • 2.8 mm / 3.6 mm / 6.0 mm fixed lens • IP66 rated water and dust resistant. Compatible with IEC60529 measurement standard. • POE 	Panasonic, Sony, Hikvision
6	IP Box Camera Outdoor with Infra Red	<ul style="list-style-type: none"> • 2 Megapixel MOS Sensor • H.264 & MJPEG dual-stream encoding • 25/30fps • Day / Night (IR), AWB, AGC, BLC • Max. IR LEDs length 30 m • 3.6 mm / 6.0 mm / 8.0 mm fixed lens • IP66 rated water and dust resistant. Compatible with IEC60529 measurement standard. • POE 	Panasonic, Sony, Hikvision
7	Kabel Instalasi	UTP Cat.6	Belden, Commscope, LS, wonderful hitech
8	Pipa Conduit Instalasi	PVC High Impact	Pipa mas, Legrand, Boss, Rifo, Vinilon
9	Cable Mark		CABS, Legrand, 3M
10	Rack	Termasuk set power distribution (outlet stop kontak) dan fan	Indorack, ABBA
	VIDEOTRON/SKORING DIGITAL		

1	Videotron Indoor P 2,5 ukuran 320 cm x 384 cm	- Module size: 32x16 cm - module resolusi : 128x64 - Power : maximal 25 watt/module - Operating life minimal 100.000 jam, - Garansi 2 tahun	lightronic, Microvision
2	Videotron Outdoor P5 ukuran 600 cm x 350 cm	- Module size: 32x16 cm - module resolusi : 128x64 - Power : maximal 25 watt/module - Operating life minimal 100.000 jam, - Garansi 2 tahun	lightronic, Microvision
3	Sending Card	Comunication : HDMI, RJ 45, U+disk, Wifi , audio output : Yes/stereo	
4	Video Processor	Content : Video, Text, Picture, 3D text, Video Type : Avi, WMV, RMB, MP4, FLV, SWF, VOB dll	
5	Server Controller PC & monitor	Core i7, Monitor LCD 32 inch	
6	Kabel Instalasi	UTP Cat.6	Belden, Commscope, LS, wonderful hitech
7	Kabel Instalasi Power	NYA 3x1x2,5 mm2	Supreme, Kabel Metal Indonesia, Kabelindo
8	Pipa Conduit Instalasi	PVC High Impact	Pipa mas, Legrand, Boss, Rifo, Vinilon
9	Cable Mark		CABS, Legrand, 3M
10	Rack	Termasuk set power distribution (outlet stop kontak) dan fan	Indorack, ABBA

3. PLUMBING (PL)

NO	PEKERJAAN	SPEKIFIKASI	MERK
	PLUMBING		
1	Paket Pompa Booster Air Bersih	Paket Pompa Booster Air Bersih - Jumlah Pompa : 2 unit - Tipe : Vertical Multi Stage Pump - Operasional : Otomatis (1 Duty, 1 Standby) - Lengkap Dengan : Panel Kontrol Otomatis, VSD, Pressure Tank, Baseplate, Header, dan Supporting	Grundfos, Ebara, Tevyn, Wilo, Versa
2	Paket Pompa Kuras GWT	Paket Pompa Kuras GWT - Jumlah Pompa : 2 unit - Debit : @ 210 LPM, Pada Head : 8 meter - Power : @ 750 Watt - Tipe : Submersible - Lengkap Dengan : Panel Kontrol Otomatis dan Supporting	Grundfos, Ebara, Tevyn, Wilo
3	Circuit Breaker Panel Kontrol Pompa	MCCB, MCB	Schneider Electric, ABB, LS
4	Komponen Panel Kontrol Pompa	Fuse, Pilot Lamp, Trafo CT, Ampere Meter, Volt Meter, KWH Meter, Selector Switch, Magnetic Contactor, Push Button, DOL Starter, Variable Speed Drive (VSD)	Schneider Electric, ABB, LS
5	Circuit Breaker Panel Kontrol Pompa	MCCB, MCB	Schneider Electric, ABB, LS

6	Komponen Panel Kontrol Pompa	Fuse, Pilot Lamp, Trafo CT, Ampere Meter, Volt Meter, KWH Meter, Selector Switch, Magnetic Contactor, Push Button, DOL Starter, Variable Speed Drive (VSD)	Schneider Electric, ABB, LS
7	Kabel Listrik Pompa	NYY	Supreme, Kabel Metal Indonesia, Kabelindo, Sumi indo kabel
8	Katup-katup dan Aksesoris : Gate Valve, Ball, Valve, Globe Valve, Y - Strainer	Class PN-16/10K sampai dengan diameter 2" material Brass/Bronze Body, diameter 2,5" ke atas material Cast Iron	Yuta, Riser, Mech, Weflo
9	Fleksibel Connection	Tekanan 10 bar	Muraflex, Tozen, Proco
10	Water Meter		Onda, Actaris, Amico
11	Level Switch		Watt, Singer
12	Pressure Gauge	Tekanan 15 bar	Nagano, Wika, BR VPG
13	Pressure Switch	Tekanan 15 bar	Nagano, Wika, VPG
14	Pipa Air Bersih & Fitting	PPR PN 10	Rucika Green, Wavin Exoplast, Westpex, Asialing, SD,
15	Pipa Air Kotor (Sewage), Pipa Air Bekas Toilet (Toilet Drain)	PVC Kelas AW 10 Bar / Non Toxic	Rucika Standard, Wavin, Vinilon, Power, Pipa Mas
16	Pipa Air Bekas Pantry (Pantry Drain)	PVC Kelas AW 10 Bar / Non Toxic	Rucika Standard, Wavin, Vinilon, Power, Pipa Mas
17	Pipa Vent	PVC Kelas AW 10 Bar / Non Toxic	Rucika Standard, Wavin, Vinilon, Power, Pipa Mas
18	Pipa Air Hujan	PVC Kelas AW 10 Bar / Non Toxic	Rucika Standard, Wavin, Vinilon, Power, Pipa Mas
19	Fitting PVC	Class 10 Bar	Rucika Standard, Wavin, Vinilon, Power, Pipa Mas
20	Hanger Rod	Galvanis	Lokal
21	Clamp	Galvanis	Lokal
22	Clean out		Antasan, Kharisma
23	Floor drain	double drain	By Arsitek
24	Roof Drain	double drain	Lokal
25	Rooftank	Stainless Steel	Biosant, Royal, Persada
26	STP	FRP	Biosant, Royal, Persada

4. PEMADAM KEBAKARAN (PMK)

NO	PEKERJAAN	SPEKIFIKASI	MERK
1	Electric Hydrant Pump	- Standart NFPA 20 - Centrifugal End Suction - Kap. 750 USGPM ; Head 100 Meter ; 90 KW/3Phase	Ebara, Grundfos, Ronald, SPP, Versa
2	Diesel Hydrant Pump	- Standart NFPA 20 - Centrifugal End Suction - Kap. 750 USGPM ; Head 80 Meter ; 90 KW/3Phase	Ebara, Grundfos, Ronald, SPP, Versa
3	Engine - Diesel Hydrant Pump		Ronald, Isuzu, FAW, Cummins
4	Jockey Hydrant Pump	- SStandart NFPA 20 - Vertical Multistage - Kap. 10 USGPM ; Head 112 Meter ; 2,2 KW/3Phase	Ebara, Grundfos, Ronald, SPP
5	Panel Kontrol	- Standart NFPA 20	Lokal
6	Hydrant Pillar	Baja Tuang, Tipe : Two Way	Guardall, Ocean Fire, Protector, Appron

7	Hydrant Box	Indoor uk: 800 x (1100-1250) x 200 mm Outdoor uk: 660 x 950 x 200 mm Lengkap dengan fire hose, machino coupling, variable jet spray	Guardall, Ocean Fire, Protector, Appron
8	Siamesse Concection	Ukuran : 1000 x 65 x 65 mm Free Standing Jenis coupling Machino Coupling atau disesuaikan dengan PMK setempat	Guardall, Ocean Fire, Protector, Appron
9	Pipa Instalasi Hydrant	Black Steel Schedule 40	Spindo, Bakrie,
10	Bitumen Sheet		Denso
11	Pengecatan	Lapisan cat dasar (prime coating) dan lapisan cat akhir	Jotun, Orica, Atlantic Ocean
12	Fitting Draad	Tipe : Galvanis, standard jis B2301 Temperatur Maks. : 20 C Tekanan Kerja Maks. : 20 Bar	SGP, JZ, Ricon
13	Fitting Las	Tipe : Galvanis, standard jis B2301 Temperatur Maks. : 20 C Tekanan Kerja Maks. : 20 Bar	SGP, JZ, Ricon
14	Gate Valve	Tipe : OS&Y	Yuta, Riser, Mech, protector
15	Check Valve	Class 16 K	Yuta, Riser, Mech, protector
16	Hydrant Valve	Class 16 K	Yuta, Riser, Mech, protector
17	Automatic Air Vent	Class 16 K, Cast Iron	Yoshitake, Armstrong, Samyang
18	Fire Extinguisher	Tipe ABC dan Tipe CO2	Guardall, Ocean Fire, GSF, Protector

5. TATA UDARA GEDUNG (TUG)

NO	PEKERJAAN	SPEKIFIKASI	MERK
	UNIT		
1	Unit AC - VRF/VRV System	Tipe : Standing Floor,	Daikin, LG, Panasonic
2	Unit AC - Jenis Single System	Tipe : Wall Mounted, Refiregerant : R32, Non Inverter	Daikin, LG, Panasonic
3	Exhaust Fan	Tipe : Ceiling	CKE, KDK, Panasonic
	PIPA		
1	Pipa Refrigerant AC	Bahan : Tembaga ASTM B280	Merk : Crane, Kembla, Uni Pro, Denji Seri : Pre-Insulated Copper Tube/Pipe
2	Pipa Drain AC	PVC AW	Rucika Standard, Wavin, Lesso
3	Isolasi Pipa AC	Elastomeric Rubber	Armaflex, Thermabreak
	KABEL		
1	Kabel Instalasi Listrik AC	NYN dan NYM	Supreme, Kabel Metal Indonesia, Kabelindo
2	Pipa Conduit Instalasi	PVC High Impact	Rucika Standard, Wavin, Vinilon, Power, Pipa Mas
3	Cable Mark		CABS, Legrand, 3M