



Tessler NR:

569-DB07-AIC-360-001

CLIENT NR:

PRD-AIC-LIS-039

CLIENT: **TAKEDA/BAXALTA**

PROJECT / AREA: BURITI EPCMV PROJECT

DETAIL DESIGN

BILL OF MATERIAL IT VOIP & DATA

0	15OCT2021	ISSUED FOR CONSTRUCTION	MAB	MAF	RSP
A	24JUN2021	90% DD ISSUE	MAB	MAF	RSP
REV	DATE	DESCRIPTION	EXEC.	CHECK	APPROV.



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NOTAS:

- 1) The current Bill of Material covers the necessary requirements for the VoIP&Data system and shared cable trays and cabinets for CCTV & ACS systems of the BURITI Project.
- 2) The construction concepts detailed hereof consider the labor and materials to properly execute the design and design intent detailed in the drawings and specifications as delivered.
- 3) This list is delivered like an illustrative form for the principal activities that are required. The Contractor is responsible to comply with the specified design and design intent.
- 4) The Contractor is responsible to supervise and report in the delivered document if anomalies exist or any extra materials are required and their quantities.
- 5) The brands and specifications for the materials and equipment will not be changed nor modified unless it is approved in written by the Takeda/Baxalta; therefore the Contractor must consider lead times on the materials and equipment.
- 6) The Contractor is responsible for the means and methods required to comply with the design and design intent. The execution of the work must comply with country and Hemobrás safety regulations.
- 7) The Contractor must consider the quoting of all materials, miscellaneous, and consumables like screws, anchors, connection caps, lubricants, insulating tape, and any other material to complete the work according to the design and design intent.
- 8) The Contractor will be responsible for the order and cleaning of all construction and storage areas, removing as well any excess materials and trash generated during the working period.
- 9) IPS/Tessler does not assume any responsibility for the construction quantities that the Contractor states thereof; it is the responsibility of the Contractor to consider the proper quantities based on the design and design intent.
- 10) Failure to identify discrepancies or omissions immediately shall be understood to indicate the Contractor's acceptance and full compliance with the design and design intent.
- 11) Takeda/Baxalta, Takeda/Baxalta's Representative and Architect/Engineer of Record will not consider, for any purpose, any claim of the bidder for any error or omission in the bid.
- 12) Accesories and materials will be break down in Detail Engineering phase.
- 13) Revision 0 - Review in quantities

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ID	DESCRIPTION	UNIT	QTY		
BUILDING 7A					
1	RACK SWITCH TYPE: 5507110BR9 CAPACITY: 42U DIMENSIONS: 800 mm (WIDTH) X 2000 mm(HEIGHT) X 800 mm (DEPTH) MATERIAL: SHEET STEEL REMARKS: CABINET FLOOR, INTERNAL USE, WITH VENTED DOOR, RAL 9005, TS 8 STANDARD LOCK; REMOVABLE ROOF PLATE; LOAD CAPACITY 1500kg; QUALITY STANDARD UL MANUFACTURER: RITTAL MODEL: TS IT TAG EQUIPMENT: SEE DOC PRD-AIC-LIS-019	Pc	2		
2	DATA SWITCH TYPE: JL256A CAPACITY: 48 RJ-45 autosensing 10/100/1000 PoE+ ports (IEEE 802.3 Type 10BASE-T, IEEE 802.3u Type 100BASE-TX, IEEE 802.3ab Type 1000BASE-T, IEEE 802.3at PoE+); Duplex: 10BASE-T/100BASE-TX: half or full; 1000BASE-T: full only 4 SFP+ 1/10GbE ports; PHY-less DIMENSIONS: 442.5 x 304.2 x 439 mm 1 U REMARKS: Dual Core ARM Cortex A9 @ 1016 MHz, 1 GB DDR3 SDRAM; Packet buffer size: 12.38 MB 4.5MB Ingress/7.875MB Egress, 4 GB Emmc; Aruba Layer 3 switch series with VSF stacking, static, RIP and Access OSPF Routing, Dynamic Segmentation, ACLs, and robust QoS MANUFACTURER: ARUBA MODEL: 2930F TAG EQUIPMENT: SEE DOC PRD-AIC-LIS-019	Pc	6		
3	DAC CABLE WITH TRANSCEIVER HP J9283-61201 10g SFP+ to SFP+ 3m direct attach copper cable with transceiver compatible with Aruba switch 2930F	set	6		
3	PATCH PANEL TYPE: FIBER OPTIC CONNECTORS MULTIMODE LC CAPACITY: 24 PORTS DIMENSIONS: 1 U MATERIAL: STEEL SAE1020 REMARKS: MODULAR PATCH PANEL 24P 1U MANUFACTURER: FURUKAWA TAG EQUIPMENT: PPO-A1031-A PPO-A3002-A	Pc	2		

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ID	DESCRIPTION	UNIT	QTY		
5	PATCH PANEL TYPE: COPPER CATEGORY 6A RJ45 CONNECTORS CAPACITY: 48 PORTS DIMENSIONS: 1 U MATERIAL: STEEL SAE1020 REMARKS: MODULAR PATCH PANEL 48P 1U HIGH DENSITY MANUFACTURER: FURUKAWA TAG EQUIPMENT: SEE DOC PRD-AIC-LIS-019	Pc	6		
6	PATCH CORD TYPE: FIBER OPTIC CONNECTORS MULTIMODE LC CAPACITY: 2 WIRES DIMENSIONS: 3m (LENGTH) MODEL: N/A	Pc	24		
7	PATCH CORD TYPE: COPPER CATEGORY 6A RJ45 CONNECTORS CAPACITY: 4 WIRES DIMENSIONS: 1m (LENGTH) MODEL: N/A	Pc	288		
8	CABLE ORGANIZER TYPE: SLOTTED DUCT BEND RADIUS CONTROL INTEGRATED OVER CAPACITY: N/A DIMENSIONS: 1 U MODEL: N/A	Pc	16		
9	PDU OF 12 ELECTRIC OUTLET OF 220 VAC CAPACITY: 12 OUTLET DIMENSIONS: 1 U MATERIAL: PLASTIC REMARKS: PDU 12 OUTLET NBR141246 20amp WITH CABLE, PLUG, GROUND CONNECTION MANUFACTURER: RITTAL MODEL: DK002265	Pc	4		
10	CONVERTER FO/FTP TYPE: FMC-SX1G DIMENSIONS: 70 mm (W) X 26 mm(H) X 95 mm (D) 2 U REMARKS: DIN RAIL MOUNTING, MONOMODE FIBER OPTICAL CONVERTER FOR TRANSMISSION AND RECEPTION, FOR USE IN RACK, PORT 1: ETHERNET RJ-45 10/100 MBPS AND PORT 14: MULTIMODE OPTICAL FIBERS 50/125µm, OPERATION WINDOW 1310 NM, WITH LC CONNECTOR, OPERATION MODE OF FULL DUPLEX FIBER, MINIMUM DISTANCE TO COVER 2 KILOMETERS MINIMUM. MANUFACTURER: TAG EQUIPMENT:	Pc	24		

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ID	DESCRIPTION	UNIT	QTY		
11	WIRELESS ACCESS POINT TYPE: 510 Series CAPACITY: dual radio, 5GHz 802.11ax 4x4 MIMO and 2.4GHz 802.11ax 2x2 MIMO DIMENSIONS: (H) 46mm x (W) 200mm x (D) 200mm; Weight: 810g REMARKS: THREE EXTERNAL ANTENNAS. WIFI STANDARD: 802.11A/B/G/N. 10/100/1000BASE-T. DUAL FREQUENCY BAND: 2.4GHZ AND 5.0GHZ. INTERIOR AND EXTERIOR USE. POWER SUPPLY: POE (802.3AF), OR AC ADAPTOR (220 VAC, 60 HZ). MAX. POWER TRANSMISSION: 22 DBM @ 2.4 GHZ / 5 GHZ. ANTENNAS: INTERNAL / EXTERNAL. MOUNTING KIT: CEILING AND WALL. MANUFACTURER: ARUBA MODEL: AP-515 TAG EQUIPMENT: SEE DOC PRD-AIC-LIS-019	Pc	14		
9	GALVANIZED STEEL CONDUIT, WITH MALE THREAD NPT TYPE ENDS NOMINAL DIAMETER OF 21MM (3/4"), IN SECTIONS OF 3 METERS,	SECTION	46		
10	90° CURVE IN APPARENT GALVANIZED IRON Ø3/	Pc	16		
12	CONDUIT CONICAL BOX TERMINAL Ø3/4"	Pc	16		
13	CONDUIT CONICAL BOX "LL" Ø3/4" WITH FRONT ACCESS TO MIRROR	Pc	15		
14	FLEXIBLE METAL DUCT Ø 3/4" WITHOUT PVC COVER	M	15		
15	CABLE UTP-4 COUPLE 100OHMS CATEGORY 6	M	800		
17	CONDUIT CONNECTOR PLATE Ø3/4"	Pc	32		
18	RAWLPLUG NYLON HEX NUT Ø3/8" WITH HEX SCREW	Pc	180		
19	HEX NUT FLAT ROUND WASHER Ø 3/8"	Pc	180		
20	CLAMP TYPE "D" IRON STEEL GALVANIZED Ø3/4" WITH HEX BOLT AND FLAT WASHER	Pc	36		
21	THREADED ROAD (Ø 3/8") 10mm X 3000mm LENGHT	SECTION	180		

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ID	DESCRIPTION	UNIT	QTY		
BUILDING 7B					
1	RACK SWITCH TYPE: 5507110BR9 CAPACITY: 42U DIMENSIONS: 800 mm (WIDTH) X 2000 mm(HEIGHT) X 800 mm (DEPTH) MATERIAL: SHEET STEEL REMARKS: CABINET FLOOR, INTERNAL USE, WITH VENTED DOOR, RAL 9005, TS 8 STANDARD LOCK; REMOVABLE ROOF PLATE; LOAD CAPACITY 1500kg; QUALITY STANDARD UL MANUFACTURER: RITTAL MODEL: TS IT TAG EQUIPMENT: SEE DOC PRD-AIC-LIS-019	Pc	2		
2	DATA SWITCH TYPE: JL256A CAPACITY: 48 RJ-45 autosensing 10/100/1000 PoE+ ports (IEEE 802.3 Type 10BASE-T, IEEE 802.3u Type 100BASE-TX, IEEE 802.3ab Type 1000BASE-T, IEEE 802.3at PoE+); Duplex: 10BASE-T/100BASE-TX: half or full; 1000BASE-T: full only 4 SFP+ 1/10GbE ports; PHY-less DIMENSIONS: 442.5 x 304.2 x 439 mm 1 U REMARKS: Dual Core ARM Cortex A9 @ 1016 MHz, 1 GB DDR3 SDRAM; Packet buffer size: 12.38 MB 4.5MB Ingress/7.875MB Egress, 4 GB EMMC; Aruba Layer 3 switch series with VSF stacking, static, RIP and Access OSPF Routing, Dynamic Segmentation, ACLs, and robust QoS MANUFACTURER: ARUBA MODEL:2930F TYPE JL256A TAG EQUIPMENT: SEE DOC PRD-AIC-LIS-019	Pc	7		
3	DAC CABLE WITH TRANSCEIVER HP J9283-61201 10g SFP+ to SFP+ 3m direct attach copper cable with transceiver compatible with Aruba switch 2930F	PÇ	7		
4	PATCH PANEL TYPE: FIBER OPTIC CONNECTORS MULTIMODE LC CAPACITY: 24 PORTS DIMENSIONS: 1 U MATERIAL: STEEL SAE1020 REMARKS: MODULAR PATCH PANEL 24P 1U MANUFACTURER: FURUKAWA TAG EQUIPMENT: PPO-B1012-A PPO-B3010-A	Pc	2		

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5	PATCH PANEL TYPE: COPPER CATEGORY 6A RJ45 CONNECTORS CAPACITY: 48 PORTS DIMENSIONS: 1 U MATERIAL: STEEL SAE1020 REMARKS: MODULAR PATCH PANEL 48P 1U HIGH DENSITY MANUFACTURER: FURUKAWA TAG EQUIPMENT: SEE DOC PRD-AIC-LIS-019	Pc	7		
6	PATCH CORD TYPE: FIBER OPTIC CONNECTORS MULTIMODE LC CAPACITY: 2 WIRES DIMENSIONS: 3m (LENGTH) MODEL: N/A	Pc	24		
7	PATCH CORD TYPE: COPPER CATEGORY 6A RJ45 CONNECTORS CAPACITY: 4 PAIRS DIMENSIONS: 1m (LENGTH) MODEL: N/A	Pc	336		
8	CABLE ORGANIZER TYPE: SLOTTED DUCT BEND RADIUS CONTROL INTEGRATED OVER CAPACITY: N/A DIMENSIONS: 1 U MODEL: N/A	Pc	15		
9	PDU OF 12 ELECTRIC OUTLET OF 220 VAC CAPACITY: 12 OUTLET DIMENSIONS: 1 U MATERIAL: PLASTIC REMARKS: PDU 12 OUTLET NBR141246 20amp WITH CABLE, PLUG, GROUND CONNECTION MANUFACTURER: RITTAL MODEL: DK002265	Pc	4		
10	CONVERTER FO/FTP TYPE: FMC-SX1G DIMENSIONS: 70 mm (W) X 26 mm(H) X 95 mm (D) 2 U REMARKS: DIN RAIL MOUNTING, MONOMODE FIBER OPTICAL CONVERTER FOR TRANSMISSION AND RECEPTION, FOR USE IN RACK, PORT 1: ETHERNET RJ-45 10/100 MBPS AND PORT 14: MULTIMODE OPTICAL FIBERS 50/125µm, OPERATION WINDOW 1310 NM, WITH LC CONNECTOR, OPERATION MODE OF FULL DUPLEX FIBER, MINIMUM DISTANCE TO COVER 2 KILOMETERS MINIMUM. MANUFACTURER: TAG EQUIPMENT:	Pc	24		

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11	WIRELESS ACCESS POINT TYPE: 510 Series CAPACITY: dual radio, 5GHz 802.11ax 4x4 MIMO and 2.4GHz 802.11ax 2x2 MIMO DIMENSIONS: (H) 46mm x (W) 200mm x (D) 200mm; Weight: 810g REMARKS: THREE EXTERNAL ANTENNAS. WIFI STANDARD: 802.11A/B/G/N. 10/100/1000BASE-T. DUAL FREQUENCY BAND: 2.4GHZ AND 5.0GHZ. INTERIOR AND EXTERIOR USE. POWER SUPPLY: POE (802.3AF), OR AC ADAPTOR (220 VAC, 60 HZ). MAX. POWER TRANSMISSION: 22 DBM @ 2.4 GHZ / 5 GHZ. ANTENNAS: INTERNAL / EXTERNAL. MOUNTING KIT: CEILING AND WALL. MANUFACTURER: ARUBA MODEL: AP-515 TAG EQUIPMENT: SEE DOC PRD-AIC-LIS-019	Pc	10		
12	GALVANIZED STEEL CONDUIT, WITH MALE THREAD NPT TYPE ENDS NOMINAL DIAMETER OF 25MM (3/4"), IN SECTIONS OF 3 METERS,	SECTION	32		
13	90° CURVE IN APPARENT GALVANIZED IRON Ø3/	Pc	10		
14	CONDUIT CONICAL BOX TERMINAL Ø3/4"	Pc	10		
15	CONDUIT CONICAL BOX "LL" Ø3/4" WITH FRONT ACCESS TO MIRROR	Pc	10		
16	FLEXIBLE METAL DUCT Ø 3/4" WITHOUT PVC COVER	M	10		
17	CABLE UTP-4 COUPLE 100OHMS CATEGORY 6	M	700		
18	CONDUIT CONNECTOR PLATE Ø3/4"	Pc	26		
19	RAWLPLUG NYLON HEX NUT Ø3/8" WITH HEX SCREW	Pc	160		
20	HEX NUT FLAT ROUND WASHER Ø 3/8"	Pc	160		
21	CLAMP TYPE "D" IRON STEEL GALVANIZED Ø3/4" WITH HEX BOLT AND FLAT WASHER	Pc	26		
22	THREADED ROAD (Ø 3/8") 10mm X 3000mm LENGHT	SECTION	160		

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ID	DESCRIPTION	UNIT	QTY		
MATERIALS "IT" BUILDING 7A					
1	GALVANIZED STEEL CONDUIT, WITH MALE THREAD NPT TYPE ENDS NOMINAL DIAMETER OF 21MM (3/4"), IN SECTIONS OF 3 METERS,	SECTION	320		
2	GALVANIZED STEEL CONDUIT, WITH MALE THREAD NPT TYPE ENDS NOMINAL DIAMETER OF 25MM (1"), IN SECTIONS OF 3 METERS,	SECTION	42		
3	90° CURVE IN APPARENT GALVANIZED IRON Ø3/	Pc	120		
4	CONDUIT CONICAL BOX TERMINAL Ø3/4"	Pc	120		
5	CONDUIT CONICAL BOX "LL" Ø3/4" WITH FRONT ACCESS TO MIRROR	Pc	120		
6	FLEXIBLE METAL DUCT Ø 3/4" WITHOUT PVC COVER	M	110		
7	CABLE UTP-4 COUPLE 100OHMS CATEGORY 6	M	4200		
8	CONDUIT CONNECTOR PLATE Ø3/4"	Pc	120		
9	RAWLPLUG NYLON HEX NUT Ø3/8" WITH HEX SCREW	Pc	1100		
10	HEX NUT FLAT ROUND WASHER Ø 3/8"	Pc	1100		
11	CLAMP TYPE "D" IRON STEEL GALVANIZED Ø3/4" WITH HEX BOLT AND FLAT WASHER	Pc	320		
12	REDUCTION GLOVE Ø1" X Ø3/4" IRON STEEL GALVANIZED	Pc	42		
13	THREADED ROAD (Ø 3/8") 10mm X 3000mm LENGHT	SECTION	160		

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MATERIALS "IT" BUILDING 7B					
1	GALVANIZED STEEL CONDUIT, WITH MALE THREAD NPT TYPE ENDS NOMINAL DIAMETER OF 21MM (3/4"), IN SECTIONS OF 3 METERS,	SECTION	420		
2	GALVANIZED STEEL CONDUIT, WITH MALE THREAD NPT TYPE ENDS NOMINAL DIAMETER OF 25MM (1"), IN SECTIONS OF 3 METERS,	SECTION	42		
3	90° CURVE IN APPARENT GALVANIZED IRON Ø3/	Pc	124		
4	CONDUIT CONICAL BOX TERMINAL Ø3/4"	Pc	124		
5	CONDUIT CONICAL BOX "LL" Ø3/4" WITH FRONT ACCESS TO MIRROR	Pc	124		
6	FLEXIBLE METAL DUCT Ø 3/4" WITHOUT PVC COVER	M	124		
7	CABLE UTP-4 COUPLE 100OHMS CATEGORY 6	M	6000		
8	CONDUIT CONNECTOR PLATE Ø3/4"	Pc	124		
9	RAWLPLUG NYLON HEX NUT Ø3/8" WITH HEX SCREW	Pc	720		
10	HEX NUT FLAT ROUND WASHER Ø 3/8"	Pc	3000		
11	CLAMP TYPE "D" IRON STEEL GALVANIZED Ø3/4" WITH HEX BOLT AND FLAT WASHER	Pc	720		
12	REDUCTION GLOVE Ø1" X Ø3/4" IRON STEEL GALVANIZED	Pc	40		
13	THREADED ROAD (Ø 3/8") 10mm X 3000mm LENGHT	SECTION	250		

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MATERIALS FOR GENERAL INSTALATION					
1	STRAIGHT STRETCH IN TRAY (CABLE TRAY) FOR CABLES, PERFORATED BASE TYPE, WITH FERROLE, IN #12 MSG CARBON STEEL PLATE, GALVANIZED BY FIRE, IN 3000mm PIECES, SUPPLIED WITH SLOT COVER, IN #16 CARBON STEEL PLATE MSG, GALVANIZED BY FIRE. MANUFACTURER: MOP/POLEODUCT OR EQUIVALENT. DIMENSION: 100mm X 100mm X 3000mm	SECTION	460		
2	STRAIGHT STRETCH IN TRAY (CABLE TRAY) FOR CABLES, PERFORATED BASE TYPE, WITH FERROLE, IN #12 MSG CARBON STEEL PLATE, GALVANIZED BY FIRE, IN 3000mm PIECES, SUPPLIED WITH SLOT COVER, IN #16 CARBON STEEL PLATE MSG, GALVANIZED BY FIRE. MANUFACTURER: MOP/POLEODUCT OR EQUIVALENT. DIMENSION: 200mm X 100mm X 3000mm	SECTION	320		
3	STRAIGHT STRETCH IN TRAY (CABLE TRAY) FOR CABLES, PERFORATED BASE TYPE, WITH FERROLE, IN #12 MSG CARBON STEEL PLATE, GALVANIZED BY FIRE, IN 3000mm PIECES, SUPPLIED WITH SLOT COVER, IN #16 CARBON STEEL PLATE MSG, GALVANIZED BY FIRE. MANUFACTURER: MOP/POLEODUCT OR EQUIVALENT. DIMENSION: 300mm X 100mm X 3000mm	SECTION	42		
4	90° HORIZONTAL CURVE FOR TRAY (CABLE TRAY) FOR CABLES, PERFORATED BASE TYPE, WITH FERTILE, 100mm BRIDGE, IN #12 MSG CARBON STEEL PLATE, FIRE GALVANIZED, SEGMENTED RADIUS OF 200mm, BEING SUPPLIED WITH A PLATE COVER OF CARBON STEEL #16 MSG, GALVANIZED BY FIRE. MANUFACTURER: MOP/POLEODUCT OR EQUIVALENT. DIMENSION: 100mm X 100mm	Pc	52		
5	90° HORIZONTAL CURVE FOR TRAY (CABLE TRAY) FOR CABLES, PERFORATED BASE TYPE, WITH FERTILE, 100mm BRIDGE, IN #12 MSG CARBON STEEL PLATE, FIRE GALVANIZED, SEGMENTED RADIUS OF 200mm, BEING SUPPLIED WITH A PLATE COVER OF CARBON STEEL #16 MSG, GALVANIZED BY FIRE. MANUFACTURER: MOP/POLEODUCT OR EQUIVALENT. DIMENSION: 200mm X 100mm	Pc	46		
6	90° HORIZONTAL CURVE FOR TRAY (CABLE TRAY) FOR CABLES, PERFORATED BASE TYPE, WITH FERTILE, 100mm BRIDGE, IN #12 MSG CARBON STEEL PLATE, FIRE GALVANIZED, SEGMENTED RADIUS OF 200mm, BEING SUPPLIED WITH A PLATE COVER OF CARBON STEEL #16 MSG, GALVANIZED BY FIRE. MANUFACTURER: MOP/POLEODUCT OR EQUIVALENT. DIMENSION: 300mm X 100mm	Pc	4		
7	INTERNAL VERTICAL CURVE 90° FOR TRAY (ELECTRO CHANNEL) FOR CABLES, PERFORATED BASE TYPE, WITH FERROLE, 100mm BRIDGE, IN #12 MSG CARBON STEEL PLATE, FIRE GALVANIZED, SEGMENTED RADIUS OF 200mm, BEING SUPPLIED WITH A BUTTON CAP OF CARBON STEEL #16 MSG, GALVANIZED BY FIRE. MANUFACTURER: MOP/POLEODUCT OR EQUIVALENT. DIMENSION: 100mm X 100mm	Pc	28		

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8	EXTERNAL VERTICAL CURVE 90° FOR TRAY (ELECTRO CHANNEL) FOR CABLES, PERFORATED BASE TYPE, WITH FERROLE, 100mm BRIDGE, IN #12 MSG CARBON STEEL PLATE, FIRE GALVANIZED, SEGMENTED RADIUS OF 200mm, BEING SUPPLIED WITH A BUTTON CAP OF CARBON STEEL #16 MSG, GALVANIZED BY FIRE. MANUFACTURER: MOP/POLEODUCT OR EQUIVALENT. DIMENSION: 200mm X 100mm	Pc	28		
9	HORIZONTAL 90° FOR TRAY (ELECTRO CHANNEL) FOR CABLES, PERFORATED BASE TYPE, WITH FERROLE, 100mm BRIDGE, IN #12 MSG CARBON STEEL PLATE, FIRE GALVANIZED, SEGMENTED RADIUS OF 200mm, BEING SUPPLIED WITH A BUTTON CAP OF CARBON STEEL #16 MSG, GALVANIZED BY FIRE. MANUFACTURER: MOP/POLEODUCT OR EQUIVALENT. DIMENSION: 300mm X 100mm	Pc	14		
10	90° HORIZONTAL CROSS FOR TRAY (CABLE TRAY) FOR CABLES, PERFORATED BASE TYPE, WITH FERROLE, 100mm BRIDGE, IN #12 MSG CARBON STEEL PLATE, FIRE GALVANIZED, SEGMENTED RADIUS OF 200mm, BEING SUPPLIED WITH BELT CAP OF CARBON STEEL #16 MSG, GALVANIZED BY FIRE. MANUFACTURER: MOP/POLEODUCT OR EQUIVALENT. DIMENSION: 100mm X 100mm	Pc	14		
11	90° HORIZONTAL CROSS FOR TRAY (CABLE TRAY) FOR CABLES, PERFORATED BASE TYPE, WITH FERROLE, 100mm BRIDGE, IN #12 MSG CARBON STEEL PLATE, FIRE GALVANIZED, SEGMENTED RADIUS OF 200mm, BEING SUPPLIED WITH BELT CAP OF CARBON STEEL #16 MSG, GALVANIZED BY FIRE. MANUFACTURER: MOP/POLEODUCT OR EQUIVALENT. DIMENSION: 200mm X 100mm	Pc	8		
12	90° REDUCTION FOR TRAY (CABLE TRAY) FOR CABLES, PERFORATED BASE TYPE, WITH FERROLE, 100mm RIBBON, IN #12 MSG CARBON STEEL PLATE, FIRE GALVANIZED, SEGMENTED RADIUS OF 200mm, BEING SUPPLIED WITH SOCKET COVER, IN FITTINGS CARBON STEEL #16 MSG, FIRE GALVANIZED. MANUFACTURER: MOP/POLEODUCT OR EQUIVALENT. DIMENSION: 300mm X 200mm	Pc	4		
13	STRAIGHT JOINT SLIC, FOR ELECTRIC CABLE WITH 100mm X 8 HOLES FLAP, FIRE GALVANIZED	Pc	1600		
14	HINGED JOINT SPLIT, FOR CABLE TRAY WITH 100mm X 8 HOLES FLAP, FIRE GALVANIZED	Pc	200		
15	FIRE GALVANIZED LENTIL HEAD SCREW Ø03/8" X Ø1/2"	Pc	12000		
16	304 Ø 3/8" STAINLESS STEEL INTERNAL THREAD ANCHOR	Pc	460		
17	FIRE GALVANIZED THREADED BAR Ø 3/8" X 3000mm	Pc	120		

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ID	DESCRIPTION	UNIT	QTY		
18	FIRE GALVANIZED HEXAGONAL NUT Ø 3/8"	Pc	22000		
19	FLAT GALVANIZED WASHER Ø 3/8	Pc	3000		
20	HEXAGONAL HEAD SCREW Ø3/8" X Ø2", SUPPLY WITH NUT AND WASHER, 304 STAINLESS STEEL MATERIAL	Pc	4800		
21	"L" ANGLE IN CARBON STEEL 2" X 2" X 6000mm, FIRE GALVANIZED	Pc	40		
22	SELF LOCKING CLAMP IN NYLON 6.6 IN BLACK COLOR 100mm X 4,00mm	Pc	12000		
23	SELF LOCKING CLAMP IN NYLON 6.6 IN BLACK COLOR 200mm X 4,00mm	Pc	12000		
24	SELF LOCKING CLAMP IN NYLON 6.6 IN BLACK COLOR 300mm X 4,00mm	Pc	12000		
25	SELF-ADHESIVE FIXER FOR PANELS AND CABLES, MADE IN NYLON 6.6, 25mm X 25mm	Pc	3000		
26	COPPER CABLE, FOR POWER SYSTEM, VOLTAGE CLASS 0.6/1kV-90oC, TRIPOLAR, CONSTITUTED OF ELECTROLYTIC COPPER WIRE, CLASS 5 STRIPING, W/ INSULATION IN HEPR RUBBER COMPOUND AND FAMBLE PVC COVER (3# 2.5mm2). REFERENCE: EPROTENAX GSETTE, MANUFACTURER: PRYSMIAN	M	800		
27	MULTIMODE OPTICAL FIBER 6 STRANDS. INTERIOR AND EXTERIOR USE. JACKET COLOR: BLACK. LOOSE TUBE DRY. 4 STRANDS. CORE: 50/125µM. JACKET: LSZH. CATEGORY OM4. EXTERNAL DIAMETER: 0.47IN (12MM). INSTALL STRAIN: 3000N. WAVELENGTH: 850 – 1300NM. OPTICAL ATTENUATION: 850NM: 3.5DB/KM / 1300NM: 1.5DB/KM. OPERATION TEMPERATURE: -4 TO 158°F (-20 A 70°C). MANUFACTURER: FURUKAWA	M	250		
28	MULTIMODE OPTICAL FIBER 6 STRANDS. INTERIOR AND EXTERIOR USE. JACKET COLOR: BLACK. LOOSE TUBE DRY. 4 STRANDS. CORE: 50/125µM. JACKET: LSZH. CATEGORY OM4. EXTERNAL DIAMETER: 0.47IN (12MM). INSTALL STRAIN: 3000N. WAVELENGTH: 850 – 1300NM. OPTICAL ATTENUATION: 850NM: 3.5DB/KM / 1300NM: 1.5DB/KM. OPERATION TEMPERATURE: -4 TO 158°F (-20 A 70°C). MANUFACTURER: FURUKAWA	M	700		Note: Foreseen for interconnection with Hemobras fiber optic annel