MAIN HOIST

Device Tag	Quantity	Material Description	Technical Description	Make	Location
2m+2mh	1	MAIN HOIST MOTOR WITH SPACE HEATER	59 MOTOR KW, 6 POLE, 40% CDF, CL-F (MECH KW: 52.7) (MECH FLC : 93.78A.) FRAME: 280S (MOTOR FLC : 105A.) TYPE: SQ.CAGE	CGL/MARATHON/SIEMENS	ON TROLLEY
2S1	1	MAIN HOIST BRAKE-1	BRAKE DIA: 400, TYPE: EHT	EMM/SOC	ON TROLLEY
2S2+2BRT	1	MAIN HOIST BRAKE-2	TYPE: FDB40, DOUBLE DISC BRAKE WITH RECTIFIER	EMM/SOC/PATHE/KAKKU	ON TROLLEY
2LS2	1	MAIN HOIST LIMIT SWITCH	TYPE: ROTARY, 10A, 4NC	EMM/SOC	ON TROLLEY
2LS2*	1	MH 1NO. LOOSE FOR EACH CRANE	TYPE: ROTARY, 10A, 4NC	EMM/SOC	ON TROLLEY
2E1	1	MAIN HOIST ENCODER (INCREMENTAL TYPE)	TYPE: EIL580-TT10.5BN.01024.A	HUBNER/REPUTED	ON TROLLEY
2DBR	1	MAIN HOIST DYNAMIC BREAKING RESISTOR	4.2 OHMS MIN., 118AMP	EMM	ON BRIDGE
2DR	1	MAIN HOIST DRIVE	415V.AC, 75 KW, 160A. TYPE: ATV71HD75N4	SCHNEIDER/ABB/SIEMENS	IN PANEL
2CH	1	MAIN HOIST LINE CHOKE	0.155mH, 184A	NEC	IN PANEL
2MCCB1	1	MOULDED CASE CIRCUIT BREAKER	415V.AC, 3POLE, 250A., 65KA, S/C, O/L PROTECTION	SIEMENS	IN PANEL
2MCB1	1	MINIATURE CIRCUIT BREAKER	2POLE, 6A	SIEMENS	IN PANEL
2MCB2	1	MINIATURE CIRCUIT BREAKER	2POLE, 6A	SIEMENS	IN PANEL
2C7	1	BRAKE CONTACTOR	COIL:110V., 16A., 3P, ADD ON - 1NO	SIEMENS	IN PANEL
2C1-5	5	AUX CONTACTORS	COIL:110V., 10A., 2NO+2NC	SIEMENS	IN PANEL
2d1	1	AUX CONTACTOR	COIL:110V., 10A., 2NO+2NC	SIEMENS	IN PANEL
2d2-2d4	3	AUX CONTACTORS	COIL:110V., 10A., 4NO, ADD ON-2NO,2NC	SIEMENS	IN PANEL
2JHC-2JLC	2	AUX CONTACTORS	COIL:110V., 10A., 2NO+2NC	SIEMENS	IN PANEL
DR1-DR2	2	AUX CONTACTORS	COIL:110V., 10A., 4NO	SIEMENS	IN PANEL
DR3	1	AUX CONTACTORS	COIL:110V., 10A., 2NO+2NC	SIEMENS	IN PANEL
DR4	1	AUX CONTACTORS	COIL:110V., 10A., 2NO+2NC, ADD ON-1NO	SIEMENS	IN PANEL
2PL1	1	PANEL LIGHT WITH SWITCH	240V., 2.5W, TYPE: LED	DSS	IN PANEL
2TS	1	THERMOSTAT FOR `2PH'	240V.AC, 0-80	VILECO/REPUTED	IN PANEL
2PH	1	PANEL HEATER	240V.AC, 20W.	VILECO/REPUTED	IN PANEL
2TG	1	TOGGLE SWITCH FOR 1TS	240V.AC, 10A.	KAYCEE	IN PANEL

Issue	Remarks	Name	Date
3	REVISED AS NOTED	DP	19.11.2019
2	REVISED AS NOTED	DP	30.09.2019
1	REVISED AS NOTED	DP	07.09.2019

Prep. DINESH | Ckd. ABHAY | APPR. SMG | ALL DIMENSIONS ARE IN MM.

CLIENT: BHARAT HEAVY ELECTRICAL LTD
POWER SECTOR
PROJECT ENGINEERING MANAGEMENT
NEW DELHI
BHEL DRG NO. : PE-V0-437-501-A517

FAFECO

DESCRIPTION: 250-50-10T x 21M POWER HOUSE CRANE (CRANE-1&2)
TITLE : SCHEMATIC CIRCUIT DIAGRAM BOM OF MAIN HOIST PANEL

FURNACE & FOUNDRY EQUIPMENT CO.
CHANDIVALI FARM MUMBAI - 72
FAFECO DRG NO.: OG-06/250-50-10Tx21M/201

Sheet 21/65

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MAIN HOIST

Device Tag	Quantity	Material Description	Technical Description	Make	Location
2b1	1	`MAIN HOIST' SPRING RETURN TYPE MASTER CONTROLLER	STEP: 5, CAMS: 6, Amp:10A	EMV/KAKKU/SOC	IN CABIN
2Pb1	1	`MH-HOIST' PUSH BUTTON	10A, 2NO (BLACK)	SIEMENS	ON CRANE PUSH BOTTON STATION
2Pb2	1	`MH-LOWER' PUSH BUTTON	10A, 2NO (WHITE)	SIEMENS	ON CRANE PUSH BOTTON STATION
2SPS1	1	SELECTOR SWITCH FOR SPEED SELECTION -MH-5%, 50%, 100%	10A, 3 POSITION, 2NO+2NC	SIEMENS/KAYCEE	ON CRANE PUSH BOTTON STATION
K4,K5,K6	3	POTENTIAL FREE CONTACTS OF PENDANT RADIO REMOTE CONTROL PANEL FOR MHP	POTENTIAL FREE RELAY, 110V.AC	SNT/REPUTED	IN REMOTE PANEL
LK1, LK2, LK3, LK4	4	POTENTIAL FREE CONTACTS OF PENDANT RADIO REMOTE CONTROL PANEL FOR MHP	POTENTIAL FREE RELAY, 110V.AC	SNT/REPUTED	IN LIFTING BEAM REMOTE RECEIVER PANEL
LBRRT	1	LIFTING BEAM RADIO REMOTE TRANSMITTER		SNT/REPUTED	ON LIFTING BEAM
LBRRR	1	LIFTING BEAM RADIO REMOTE RECEIVER PANEL	110V.AC	SNT/REPUTED	ON BRIDGE
2il3	1	LIFTING BEAM LEFT TILT INDICATING LAMP	110V AC LED LAMP, (AMBER)	SIEMENS	ON LIFTING BEAM D.BOARD
2il4	1	LIFTING BEAM RIGHT TILT INDICATING LAMP	110V AC LED LAMP, (BLUE)	SIEMENS	ON LIFTING BEAM D.BOARD
2il5	1	LIFTING BEAM LEFT TILT TRIP INDICATING LAMP	110V AC LED LAMP, (AMBER)	SIEMENS	ON LIFTING BEAM D.BOARD
2il6	1	LIFTING BEAM RIGHT TILT TRIP INDICATING LAMP	110V AC LED LAMP, (BLUE)	SIEMENS	ON LIFTING BEAM D.BOARD
H1	1	ELECTRICAL HOOTER FOR LIFTING BEAM TILT	110V.	KHERAJ/REPUTED	ON LIFTING BEAM D.BOARD
P1, P2, P3, P4	4	PROXY SENSOR FOR LIFTING BEAM		SNT/REPUTED	ON LIFTING BEAM
MHLCU+ AHLCU	2	MH & AH LOAD CELL UNIT	110V.AC	IPA/REPUTED	ON TROLLEY
MHLCJB+ AHLCJB	2	MH & AH LOAD CELL JN. BOX	W-150, D-80, H-150	IPA/REPUTED	ON TROLLEY
LCP	1	MH & AH LOAD CELL PANEL	W-300, D-210, H-400	IPA/REPUTED	IN CABIN
LCD	1	MH + AH LOAD CELL DISPLAY	Dot Matrix LCD with LED back light	IPA/REPUTED	ON BRIDGE

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POWER SECTOR
PROJECT ENGINEERING MANAGEMENT
NEW DELHI
BHEL DRG NO. : PE-V0-437-501-A517

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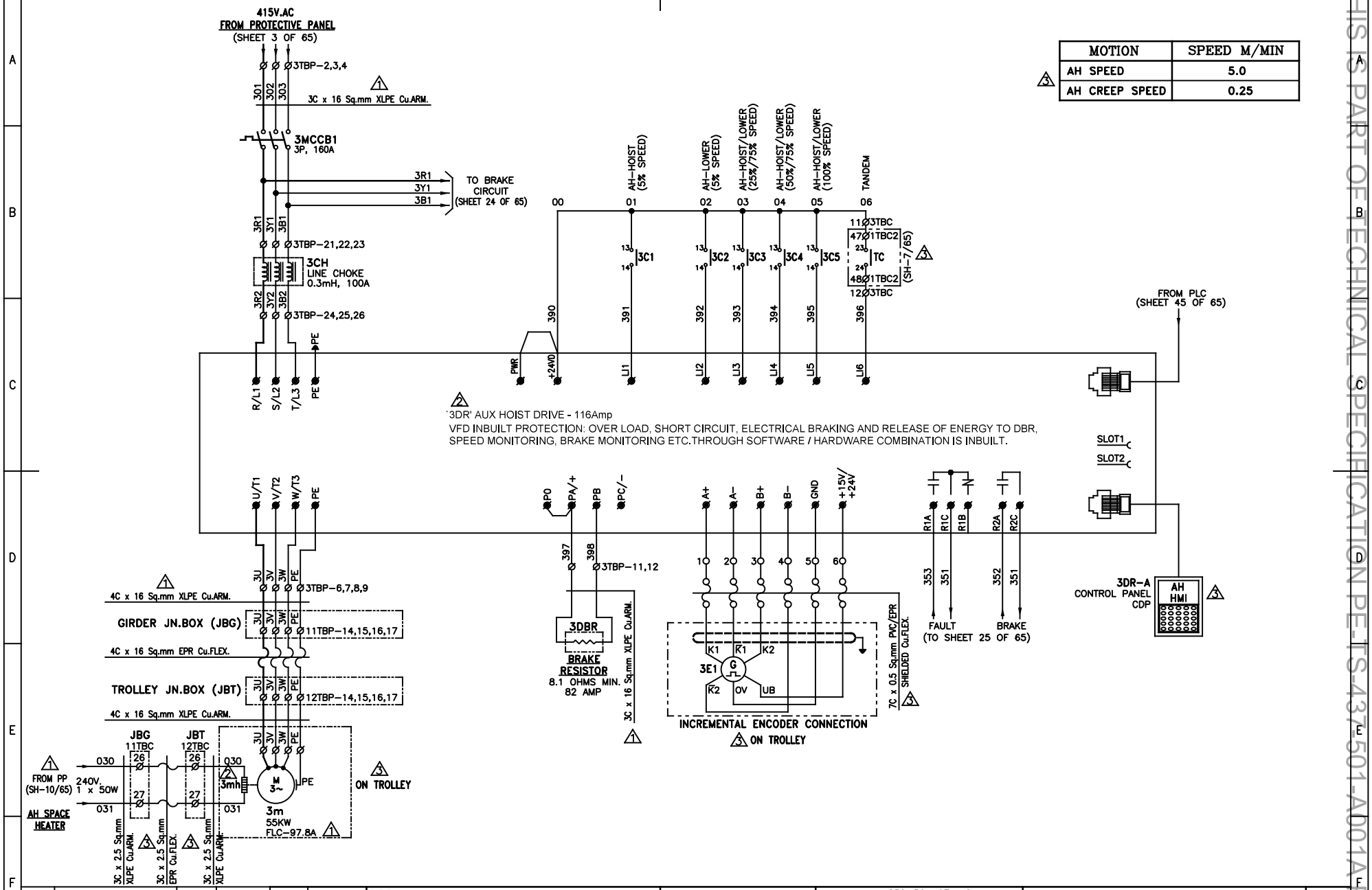
DESCRIPTION: 250-50-10T x 21M POWER HOUSE CRANE (CRANE-1&2)
TITLE : SCHEMATIC CIRCUIT DIAGRAM BOM OF MAIN HOIST PANEL

FURNACE & FOUNDRY EQUIPMENT CO.
CHANDIVALI FARM MUMBAI - 72
FAFECO DRG NO.: OG-06/250-50-10Tx21M/201

Sheet 22/65

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MOTION	SPEED M/MIN
AH SPEED	5.0
AH CREEP SPEED	0.25

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CLIENT
BHARAT HEAVY ELECTRICAL LTD
POWER SECTOR
PROJECT ENGINEERING MANAGEMENT
NEW DELHI
BHEL DRG NO. : PE-V0-437-501-A517

FAFECO

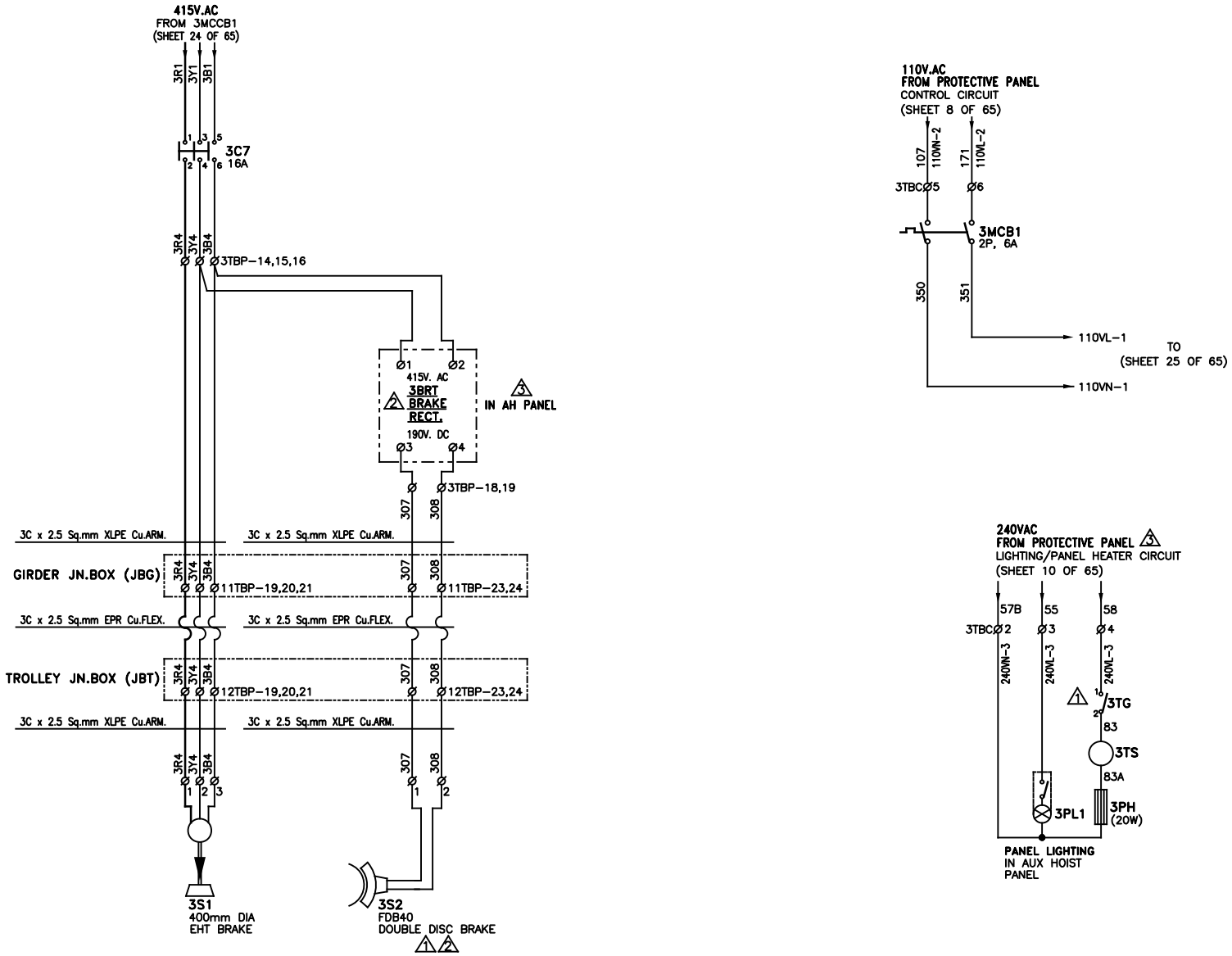
DESCRIPTION: 250-50-10T x 21M POWER HOUSE CRANE (CRANE-1&2)
TITLE : SCHEMATIC CIRCUIT DIAGRAM BOM OF AUX HOIST PANEL

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CHANDIVALI FARM MUMBAI - 72
FAFECO DRG NO.: OG-06/250-50-10Tx21M/201

Sheet 23/65

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NEW DELHI
BHEL DRG NO. : PE–V0–437–501–A517

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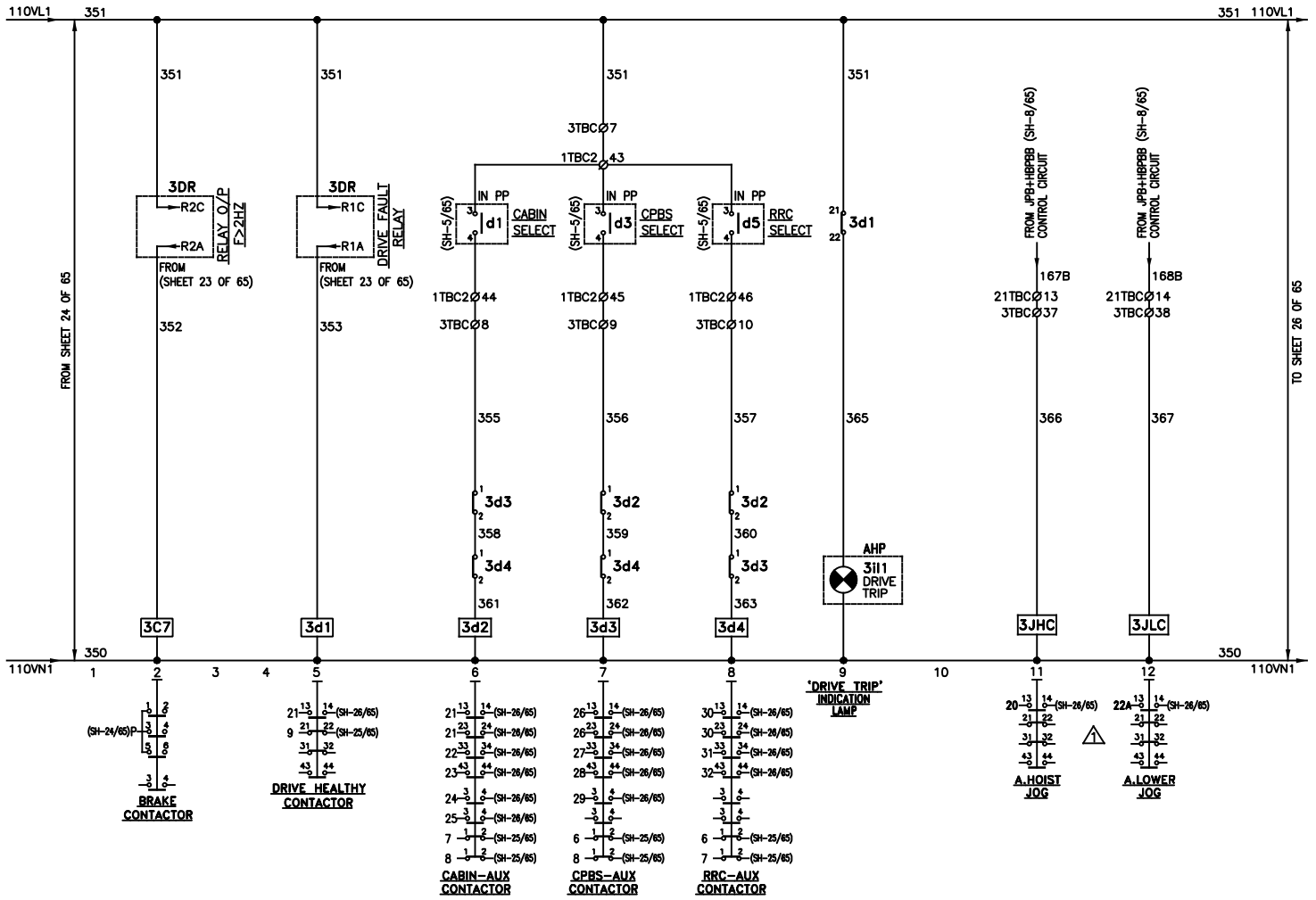
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CHANDIVALI FARM MUMBAI – 72
FAFECO DRG NO.: OG–06/250–50–10Tx21M/201

Sheet 24 / 65

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				Prep.	DINESH
				Ckd.	ABHAY
1	REVISED AS NOTED	DP	07.09.2019	APPR.	SMG
Issue	Remarks	Name	Date	ALL DIMENSIONS ARE IN MM.	

CLIENT

BHARAT HEAVY ELECTRICAL LTD
POWER SECTOR
PROJECT ENGINEERING MANAGEMENT
NEW DELHI

BHEL DRG NO. : PE-V0-437-501-A517

FAFECO

DESCRIPTION: 250-50-10T x 21M POWER HOUSE CRANE (CRANE-1&2)

TITLE : SCHEMATIC CIRCUIT DIAGRAM BOM OF AUX HOIST PANEL

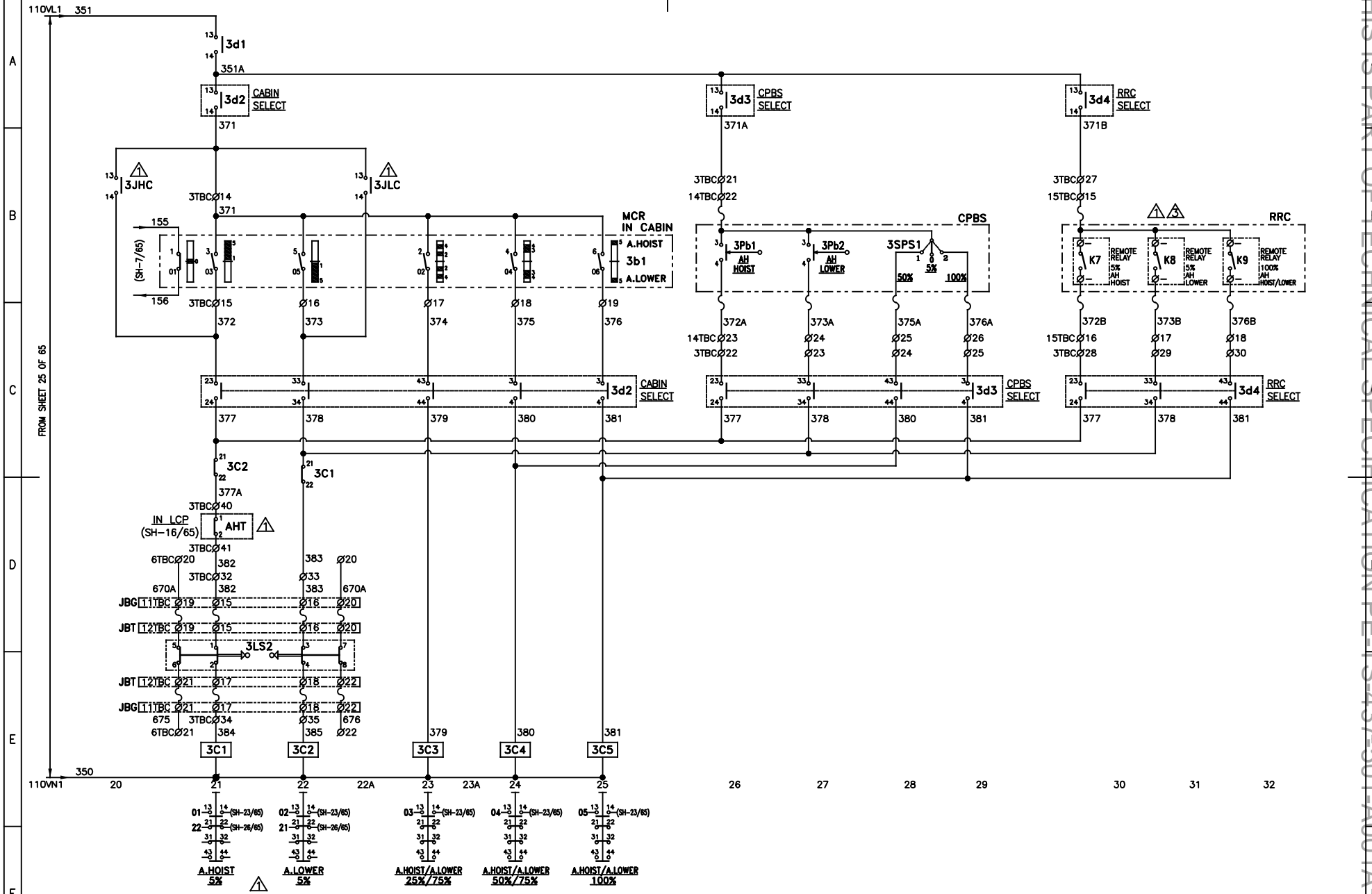
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CHANDIVALI FARM MUMBAI - 72

FAFECO DRG NO.: OG-06/250-50-10Tx21M/201

Sheet 25 / 65

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POWER SECTOR
PROJECT ENGINEERING MANAGEMENT
NEW DELHI
BHEL DRG NO. : PE-V0-437-501-A517

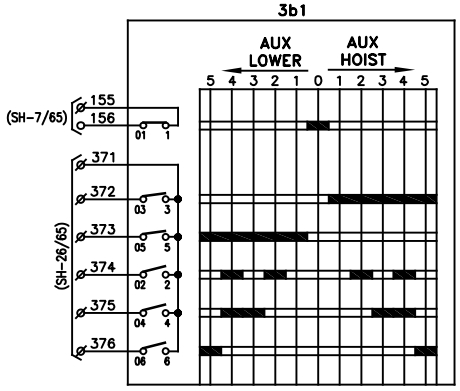
FAFECO

DESCRIPTION: 250-50-10T x 21M POWER HOUSE CRANE (CRANE-1&2)
TITLE : SCHEMATIC CIRCUIT DIAGRAM BOM OF AUX HOIST PANEL

FURNACE & FOUNDRY EQUIPMENT CO.
CHANDIVALI FARM MUMBAI - 72
FAFECO DRG NO.: OG-06/250-50-10Tx21M/201

Sheet 26/65

A3.dwg



CONTROLLER SEQUENCE

MASTER CONTROLLER	CONTACTORS	3C1	3C2	3C3	3C4	3C5	3C7
AUX HOIST	5	○				○	○
	4	○		○	○		○
	3	○			○		○
	2	○		○			○
	1	○					○
OFF	0						
AUX LOWER	1		○				○
	2		○	○			○
	3		○		○		○
	4		○	○	○		○
	5		○			○	○

CONTACTORS SEQUENCE

○ CONTACTORS ENERGISED.

NOTE: FOR PUSH BUTTON OPERATION

PUSH BUTTON	SPEED	CONTACTORS 3C7	3C1	3C2	3C3	3C4	3C5
3Pb1	100%	○	○				○
	50%	○	○			○	
	5%	○	○				
3 OFF							
3Pb2	5%	○		○			
	50%	○		○		○	
	100%	○		○			○

CONTACTORS SEQUENCE

○ CONTACTORS ENERGISED

3 NOTE: FOR REMOTE OPERATION

RELAY K7:– FOR AH HOIST–5%
RELAY K8:– FOR AH LOWER–5%
RELAY K9:– FOR AH HOIST/LOWER–100%

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POWER SECTOR
PROJECT ENGINEERING MANAGEMENT
NEW DELHI
BHEL DRG NO. : PE–V0–437–501–A517

FAFECO

DESCRIPTION: 250–50–10T x 21M POWER HOUSE CRANE (CRANE–1&2)
TITLE : SCHEMATIC CIRCUIT DIAGRAM BOM OF AUX HOIST PANEL

FURNACE & FOUNDRY EQUIPMENT CO.
CHANDIVALI FARM MUMBAI – 72
FAFECO DRG NO.: OG–06/250–50–10Tx21M/201

Sheet 27/65

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AUX HOIST

Device Tag	Quantity	Material Description	Technical Description	Make	Location
3m+3mh	1	AUX HOIST MOTOR WITH SPACE HEATER	55 MOTOR KW, 6 POLE, 40% CDF, CL-F (MECH KW: 48.7) (MECH FLC : 86.5A.) FRAME: 280S (MOTOR FLC : 97.8A.) TYPE: SQ.CAGE	CGL/MARATHON/SIEMENS	ON TROLLEY
3S1	1	AUX HOIST BRAKE-1	BRAKE DIA: 400, TYPE: EHT	EMM/SOC	ON TROLLEY
3S2+3BRT	1	AUX HOIST BRAKE-2	TYPE: FDB40, DISC BRAKE WITH RECTIFIER	EMM/SOC/PATHE/KAKKU	ON TROLLEY
3LS2	1	AUX HOIST LIMIT SWITCH	TYPE: ROTARY, 10A, 4NC	EMM/SOC	ON TROLLEY
3LS2*	1	AH 1NO. LOOSE FOR EACH CRANE	TYPE: ROTARY, 10A, 4NC	EMM/SOC	ON TROLLEY
3E1	1	AUX HOIST ENCODER (INCREMENTAL TYPE)	TYPE: EIL580-TT10.5BN.01024.A	HUBNER/REPUTED	ON TROLLEY
3DBR	1	AUX HOIST DYNAMIC BREAKING RESISTOR	8.1 OHMS MIN., 82AMP	EMM	ON BRIDGE
3DR	1	AUX HOIST DRIVE	415V.AC, 55 KW, 116A. TYPE: ATV71HD55N4	SCHNEIDER/ABB/SIEMENS	IN PANEL
3CH	1	AUX HOIST LINE CHOKE	0.3mH, 100A	NEC	IN PANEL
3MCCB1	1	MOULDED CASE CIRCUIT BREAKER	415V.AC, 3POLE, 160A., 25KA, S/C, O/L PROTECTION	SIEMENS	IN PANEL
3MCB1	1	MINIATURE CIRCUIT BREAKER	2POLE, 6A	SIEMENS	IN PANEL
3C7	1	BRAKE CONTACTOR	COIL:110V., 16A., 3P, ADD ON - 1NO	SIEMENS	IN PANEL
3C1-5	5	AUX CONTACTORS	COIL:110V., 10A., 2NO+2NC	SIEMENS	IN PANEL
3d1	1	AUX CONTACTOR	COIL:110V., 10A., 2NO+2NC	SIEMENS	IN PANEL
3d2-3d4	3	AUX CONTACTORS	COIL:110V., 10A., 4NO, ADD ON-2NO,2NC	SIEMENS	IN PANEL
3JHC-3JLC	2	AUX CONTACTORS	COIL:110V., 10A., 2NO+2NC	SIEMENS	IN PANEL
3PL1	1	PANEL LIGHT WITH SWITCH	240V., 2.5W, TYPE: LED	DSS	IN PANEL
3TS	1	THERMOSTAT FOR `3PH'	240V.AC, 0-80	VILECO/REPUTED	IN PANEL
3PH	1	PANEL HEATER	240V.AC, 20W.	VILECO/REPUTED	IN PANEL
3TG	1	TOGGLE SWITCH FOR 1TS	240V.AC, 10A.	KAYCEE	IN PANEL
3il1	1	AUX HOIST DRIVE TRIP	LED INDICATING LAMP (AMBER), 110V.AC	SIEMENS	ON PANEL DOOR

Issue	Remarks	Name	Date
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CLIENT: BHARAT HEAVY ELECTRICAL LTD
POWER SECTOR
PROJECT ENGINEERING MANAGEMENT
NEW DELHI
BHEL DRG NO. : PE-V0-437-501-A517

FAFECO

DESCRIPTION: 250-50-10T x 21M POWER HOUSE CRANE (CRANE-1&2)
TITLE : SCHEMATIC CIRCUIT DIAGRAM BOM OF AUX HOIST PANEL

FURNACE & FOUNDRY EQUIPMENT CO.
CHANDIVALI FARM MUMBAI - 72
FAFECO DRG NO.: OG-06/250-50-10Tx21M/201

Sheet 28/65

THIS IS PART OF TECHNICAL SPECIFICATION PE-TS-437-501-A001/A REV 0

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AUX HOIST

Device Tag	Quantity	Material Description	Technical Description	Make	Location
3b1	1	`AUX HOIST' SPRING RETURN TYPE MASTER CONTROLLER	STEP: 5, CAMS: 6, Amp:10A	EMV/KAKKU/SOC	IN CABIN
3Pb1	1	`AH-HOIST' PUSH BUTTON	10A, 2NO (BLACK)	SIEMENS	ON CRANE PUSH BOTTON STATION
3Pb2	1	`AH-LOWER' PUSH BUTTON	10A, 2NO (WHITE)	SIEMENS	ON CRANE PUSH BOTTON STATION
3SPS1	1	SELECTOR SWITCH FOR SPEED SELECTION -AH - 5%, 50%, 100%	10A, 3 POSITION, 2NO+2NC	SIEMENS/KAYCEE	ON CRANE PUSH BOTTON STATION
K7,K8,K9	3	POTENTIAL FREE CONTACTS OF PENDANT RADIO REMOTE CONTROL PANEL FOR AHP	POTENTIAL FREE RELAY, 110V.AC	SNT/REPUTED	IN REMOTE PANEL

THIS IS PART OF TECHNICAL SPECIFICATION PE-TS-437-501-A001/A REV 0

Issue	Remarks	Name	Date

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NEW DELHI
BHEL DRG NO. : PE-V0-437-501-A517

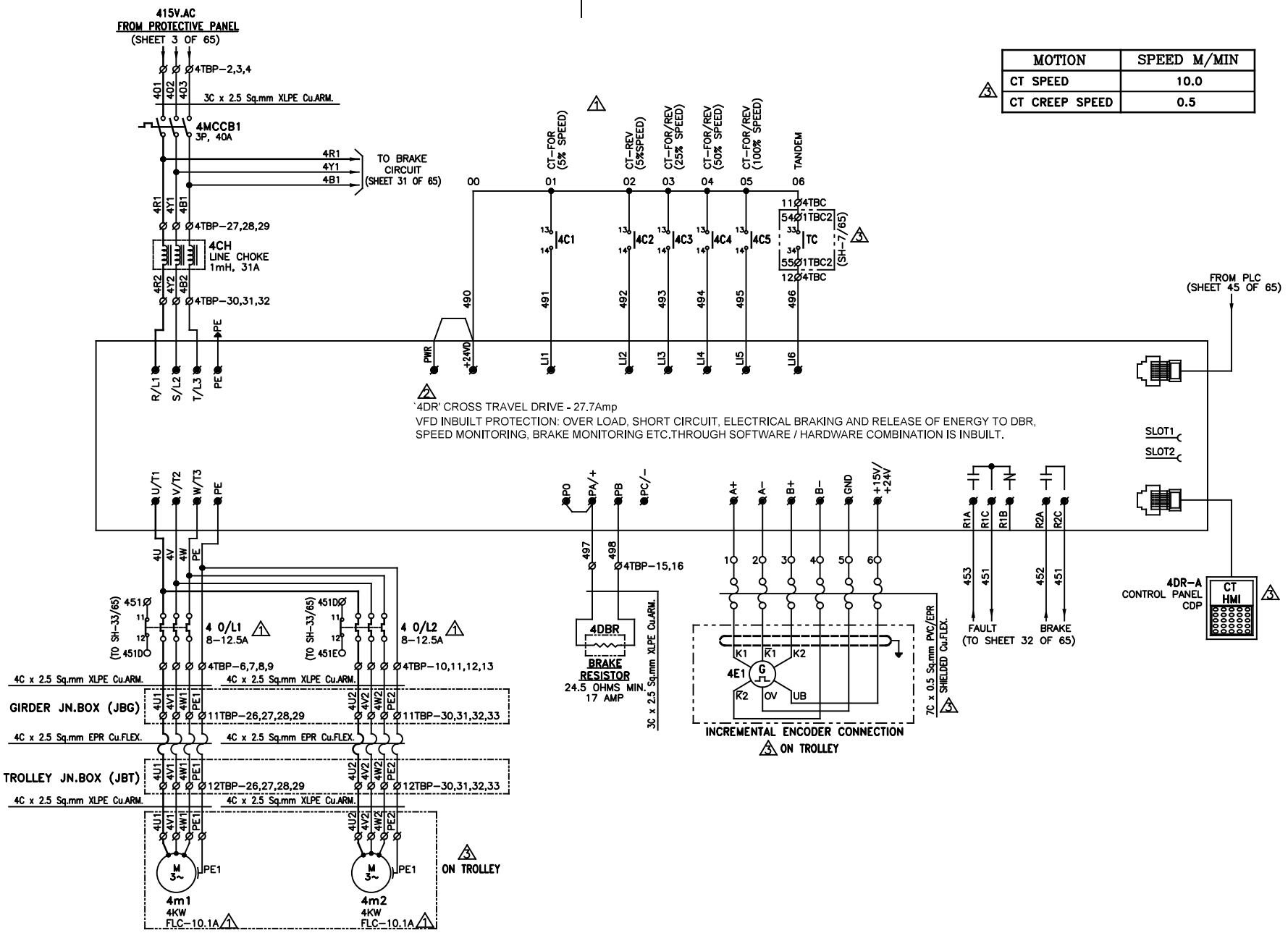
FAFECO

DESCRIPTION: 250-50-10T x 21M POWER HOUSE CRANE (CRANE-1&2)
TITLE : SCHEMATIC CIRCUIT DIAGRAM BOM OF AUX HOIST PANEL

FURNACE & FOUNDRY EQUIPMENT CO.
CHANDIVALI FARM MUMBAI - 72
FAFECO DRG NO.: OG-06/250-50-10Tx21M/201

Sheet 29/65

A3.dwg



MOTION	SPEED M/MIN
CT SPEED	10.0
CT CREEP SPEED	0.5

Issue	Remarks	Name	Date	
3	REVISED AS NOTED	DP	19.11.2019	Prep. DINESH
2	REVISED AS NOTED	DP	30.09.2019	Ckd. ABHAY
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POWER SECTOR
PROJECT ENGINEERING MANAGEMENT
NEW DELHI

BHEL DRG NO. : PE-V0-437-501-A517

FAFECO

DESCRIPTION: 250-50-10T x 21M POWER HOUSE CRANE (CRANE-1&2)

TITLE : SCHEMATIC CIRCUIT DIAGRAM BOM OF CROSS TRAVEL PANEL

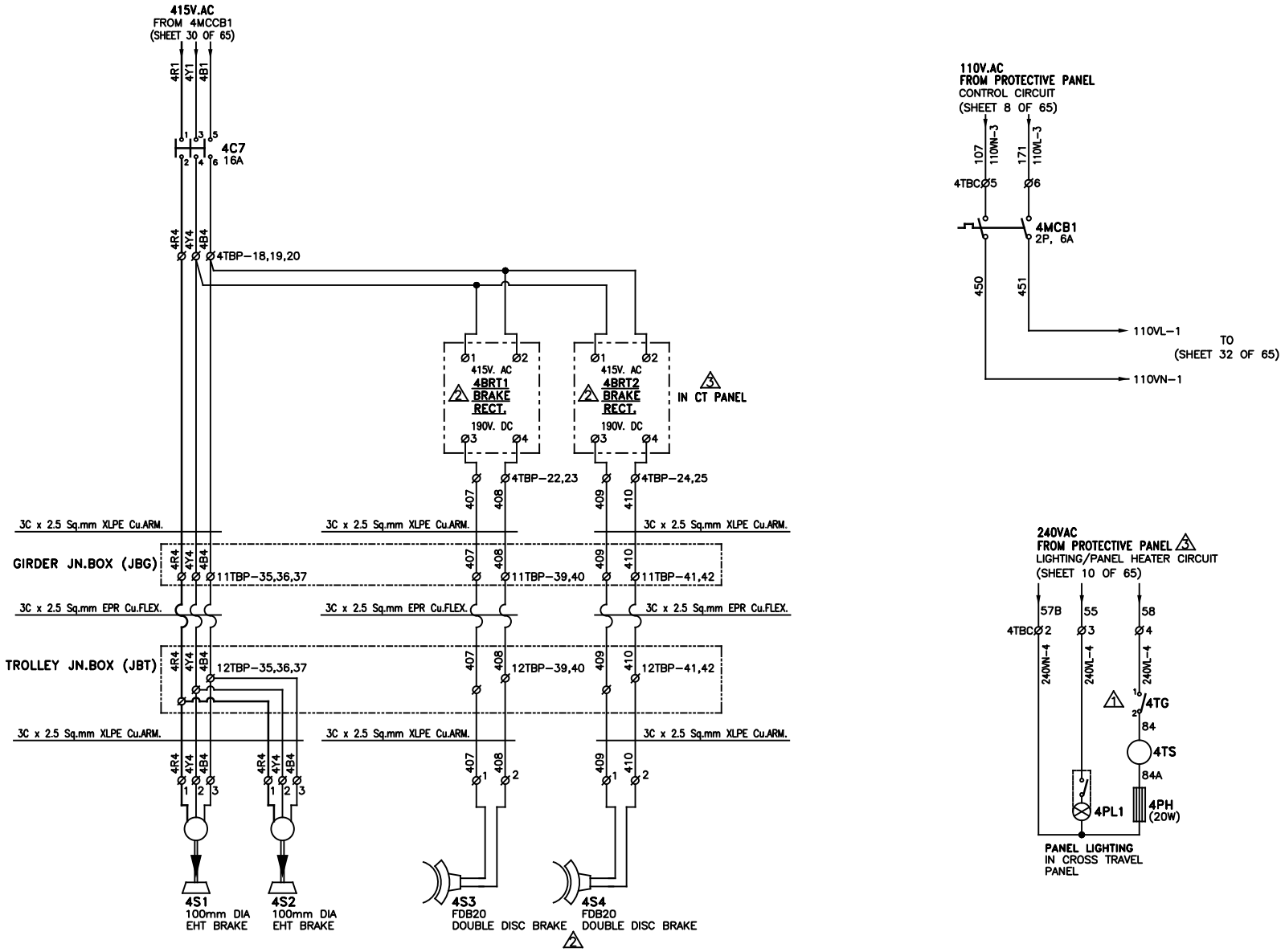
FURNACE & FOUNDRY EQUIPMENT CO.
CHANDIVALI FARM MUMBAI - 72

FAFECO DRG NO.: OG-06/250-50-10Tx21M/201

Sheet 30/65

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POWER SECTOR
PROJECT ENGINEERING MANAGEMENT
NEW DELHI

BHEL DRG NO. : PE-V0-437-501-A517

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DESCRIPTION: 250-50-10T x 21M POWER HOUSE CRANE (CRANE-1&2)

TITLE : SCHEMATIC CIRCUIT DIAGRAM BOM OF CROSS TRAVEL PANEL

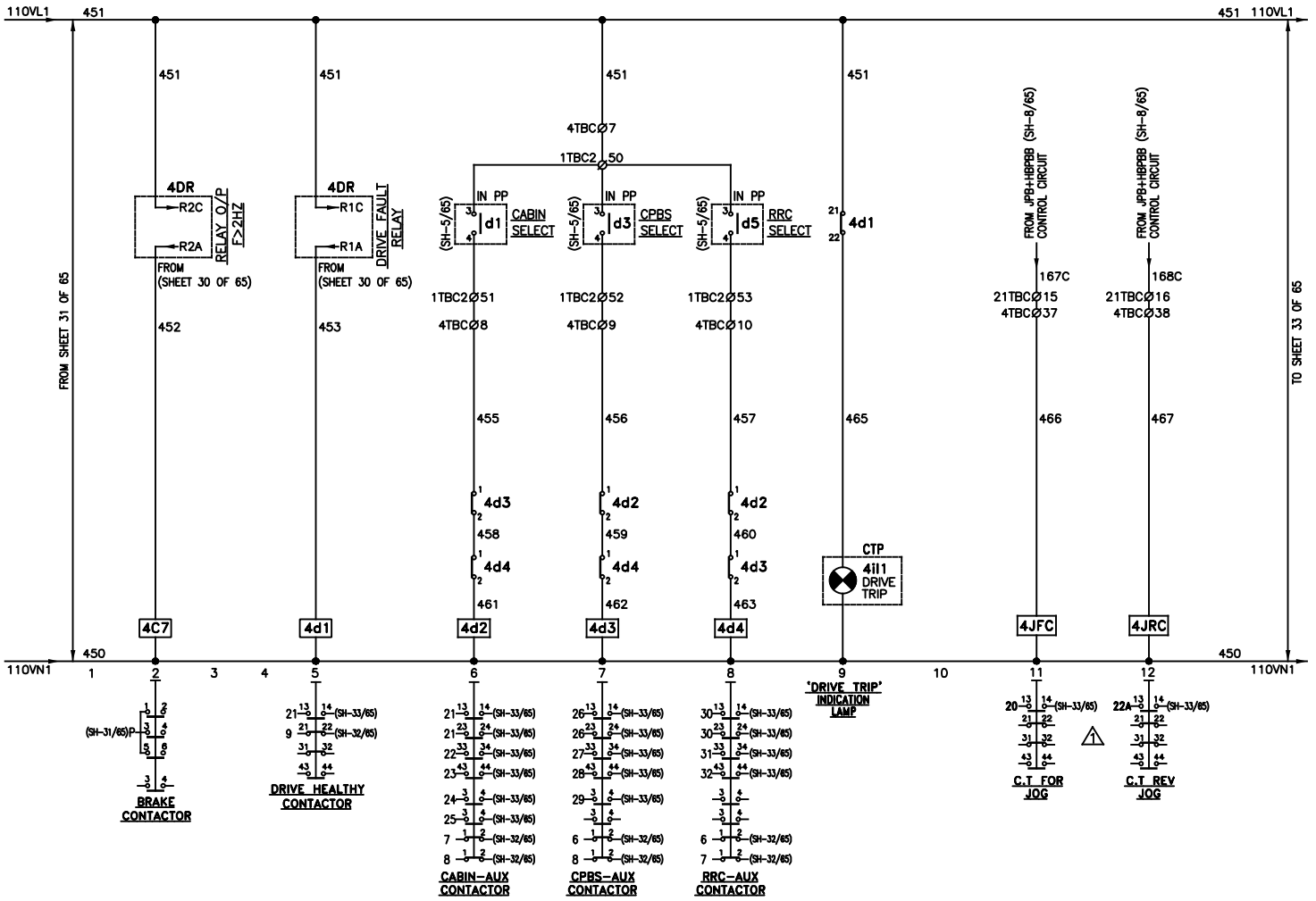
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CHANDIVALI FARM MUMBAI - 72

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Sheet 31/65

A3.dwg

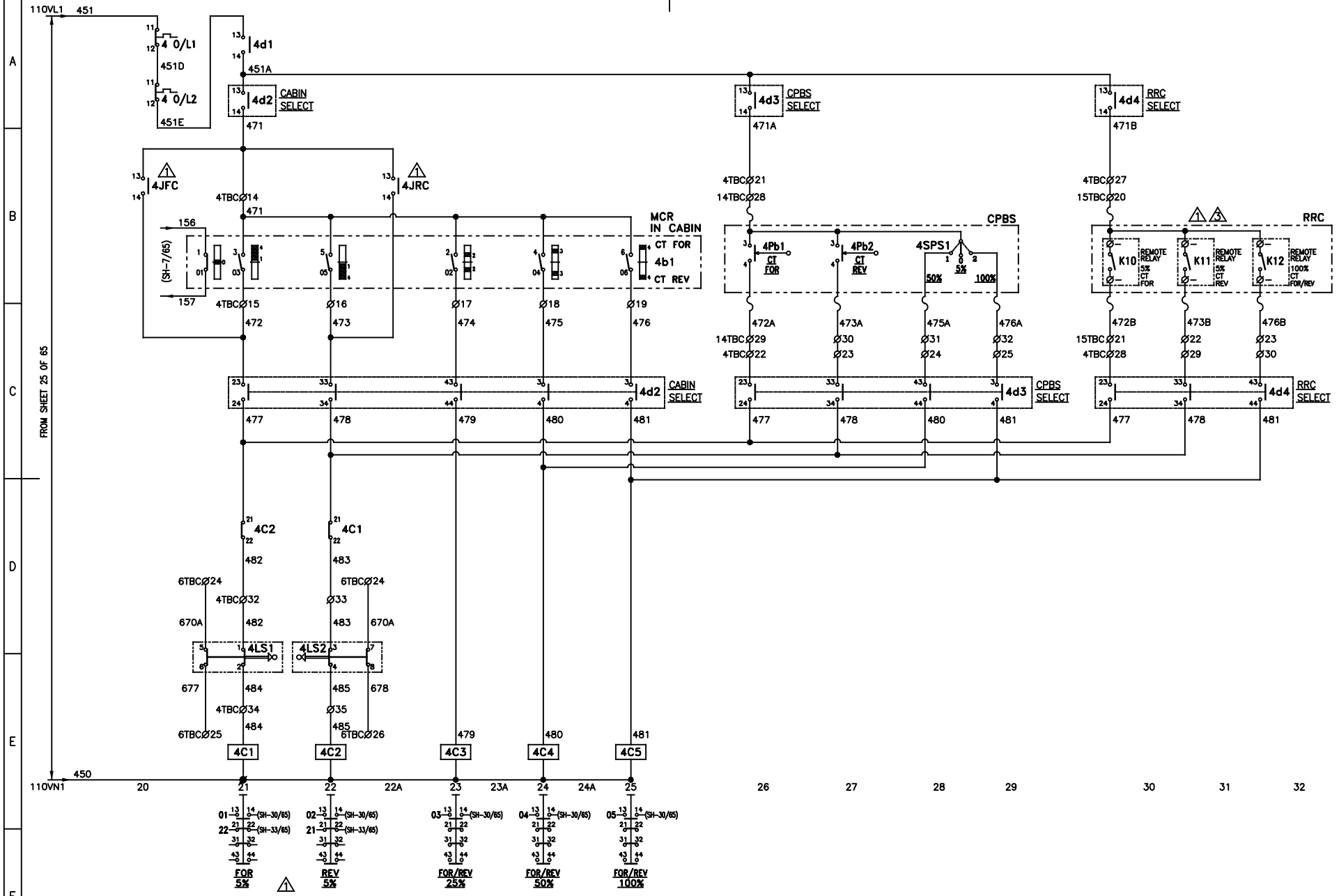
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				Prep.	DINESH	CLIENT	BHARAT HEAVY ELECTRICAL LTD POWER SECTOR PROJECT ENGINEERING MANAGEMENT NEW DELHI	FAFECO	DESCRIPTION: 250-50-10T x 21M POWER HOUSE CRANE (CRANE-1&2)	FURNACE & FOUNDRY EQUIPMENT CO. CHANDIVALI FARM MUMBAI - 72	Sheet 32/65
				Ckd.	ABHAY					
1	REVISED AS NOTED	DP	07.09.2019	APPR.	SMG			TITLE : SCHEMATIC CIRCUIT DIAGRAM BOM OF CROSS TRAVEL PANEL	FAFECO DRG NO.: OG-06/250-50-10Tx21M/201	
Issue	Remarks	Name	Date	ALL DIMENSIONS ARE IN MM.		BHEL DRG NO. : PE-V0-437-501-A517				

A3.dwg

THIS IS PART OF TECHNICAL SPECIFICATION PE-TS-437-501-A001/A REV 0



Issue	Remarks	Name	Date
3	REVISED AS NOTED	DP	19.11.2019
1	REVISED AS NOTED	DP	07.09.2019

Prep. DINESH
Ckd. ABHAY
APPR. SMG
ALL DIMENSIONS ARE IN MM.

CLIENT
BHARAT HEAVY ELECTRICAL LTD
POWER SECTOR
PROJECT ENGINEERING MANAGEMENT
NEW DELHI
BHEL DRG NO. : PE-V0-437-501-A517

FAFECO

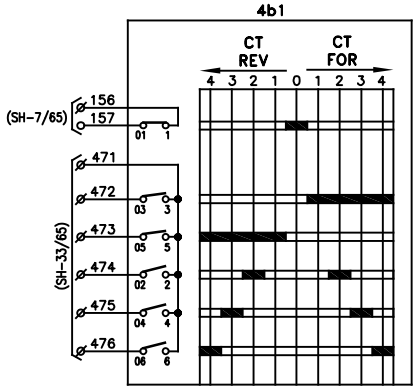
DESCRIPTION: 250-50-10T x 21M POWER HOUSE CRANE (CRANE-1&2)
TITLE : SCHEMATIC CIRCUIT DIAGRAM BOM OF CROSS TRAVEL PANEL

FURNACE & FOUNDRY EQUIPMENT CO.
CHANDIVALI FARM MUMBAI - 72
FAFECO DRG NO.: OG-06/250-50-10Tx21M/201

Sheet 33/65

A3.dwg

THIS IS PART OF TECHNICAL SPECIFICATION PE-TS-437-501-A001/A REV 0



CONTROLLER SEQUENCE

MASTER CONTROLLER			4C1	4C2	4C3	4C4	4C5	4C7
	CONTACTORS							
CT FOR		4	○				○	○
		3	○			○		○
		2	○		○			○
		1	○					○
OFF		0						
CT REV		1		○				○
		2		○	○			○
		3		○		○		○
		4		○			○	○

CONTACTORS SEQUENCE

○ CONTACTORS ENERGISED.

NOTE: FOR PUSH BUTTON OPERATION

PUSH BUTTON	SPEED	CONTACTORS 4C7	4C1	4C2	4C3	4C4	4C5
4Pb1	100%	○	○				○
	50%	○	○			○	
	5%	○	○				
3 OFF							
4Pb2	5%	○		○			
	50%	○		○		○	
	100%	○		○			○

CONTACTORS SEQUENCE

○ CONTACTORS ENERGISED

3 NOTE: FOR REMOTE OPERATION

RELAY K10:- FOR CT FOR-5%
RELAY K11:- FOR CT REV-5%
RELAY K12:- FOR CT FOR/REV-100%

Issue	Remarks	Name	Date
3	REVISED AS NOTED	DP	19.11.2019

Prep. DINESH
Ckd. ABHAY
APPR. SMG
ALL DIMENSIONS ARE IN MM.

CLIENT: BHARAT HEAVY ELECTRICAL LTD
POWER SECTOR
PROJECT ENGINEERING MANAGEMENT
NEW DELHI
BHEL DRG NO. : PE-V0-437-501-A517

FAFECO

DESCRIPTION: 250-50-10T x 21M POWER HOUSE CRANE (CRANE-1&2)
TITLE : SCHEMATIC CIRCUIT DIAGRAM BOM OF CROSS TRAVEL PANEL

FURNACE & FOUNDRY EQUIPMENT CO.
CHANDIVALI FARM MUMBAI - 72
FAFECO DRG NO.: OG-06/250-50-10Tx21M/201

Sheet 34/65

A3.dwg

THIS IS PART OF TECHNICAL SPECIFICATION PE-TS-437-501-A001/A REV 0

CROSS TRAVEL

Device Tag	Quantity	Material Description	Technical Description	Make	Location
4m1-2	2	CROSS TRAVEL MOTORS	4 MOTOR KW, 6 POLE, 40% CDF, CL-F FRAME: 132S (MOTOR FLC : 10.1A.) TYPE: SQ.CAGE	CGL/MARATHON/SIEMENS	ON TROLLEY
4S1-2	2	CROSS TRAVEL BRAKES-1-2	BRAKE DIA: 100, TYPE: EHT	EMV/SOC	ON TROLLEY
2 4S3-4+ 4BRT1-2	2	CROSS TRAVEL BRAKES-3-4	TYPE: FDB20, DISC BRAKE WITH RECTIFIER	EMV/SOC/PATHE/KAKKU	ON TROLLEY
4LS1-2	2	CROSS TRAVEL LIMIT SWITCH	TYPE: 1 WAY ROLLER LEVER, 10A, 2NC	EMV/SOC	ON GIRDER
3 4E1	1	CROSS TRAVEL ENCODER (INCREMENTAL TYPE)	TYPE: EIL580-TT10.5BN.01024.A	HUBNER/REPUTED	ON TROLLEY
4DBR	1	CROSS TRAVEL DYNAMIC BREAKING RESISTOR	24.5 OHMS MIN., 17AMP	EMV/YESDEE	ON BRIDGE
4DR	1	CROSS TRAVEL DRIVE	415V.AC, 11 KW, 27.7A. TYPE: ATV71HD11N4	SCHNEIDER/ABB/SIEMENS	IN PANEL
4CH	1	CROSS TRAVEL LINE CHOKE	1mH, 31A	NEC	IN PANEL
2 4MCCB1	1	MOULDED CASE CIRCUIT BREAKER	415V.AC, 3POLE, 40A., 25KA, S/C, O/L PROTECTION	SIEMENS	IN PANEL
4MCB1	1	MINIATURE CIRCUIT BREAKER	2POLE, 6A	SIEMENS	IN PANEL
4C7	1	BRAKE CONTACTOR	COIL:110V., 16A., 3P, ADD ON - 1NO	SIEMENS	IN PANEL
4C1-5	5	AUX CONTACTORS	COIL:110V., 10A., 2NO+2NC	SIEMENS	IN PANEL
4d1	1	AUX CONTACTOR	COIL:110V., 10A., 2NO+2NC	SIEMENS	IN PANEL
4d2-4d4	3	AUX CONTACTORS	COIL:110V., 10A., 4NO, ADD ON-2NO,2NC	SIEMENS	IN PANEL
4JFC-4JRC	2	AUX CONTACTORS	COIL:110V., 10A., 2NO+2NC	SIEMENS	IN PANEL
4O/L1-2	2	OVER LOAD RELAY FOR MOTOR	COIL:110V., TYPE: THERMAL, RANGE: 8-12.5A	SIEMENS	IN PANEL
4PL1	1	PANEL LIGHT WITH SWITCH	240V., 2.5W, TYPE: LED	DSS	IN PANEL
4TS	1	THERMOSTAT FOR `4PH'	240V.AC, 0-80	VILECO/REPUTED	IN PANEL
4PH	1	PANEL HEATER	240V.AC, 20W.	VILECO/REPUTED	IN PANEL
4TG	1	TOGGLE SWITCH FOR 1TS	240V.AC, 10A.	KAYCEE	IN PANEL
4il1	1	CROSS TRAVEL DRIVE TRIP	LED INDICATING LAMP (AMBER), 110V.AC	SIEMENS	ON PANEL DOOR

Issue	Remarks	Name	Date
3	REVISED AS NOTED	DP	19.11.2019
2	REVISED AS NOTED	DP	30.09.2019
1	REVISED AS NOTED	DP	07.09.2019

Prep. DINESH | Ckd. ABHAY | APPR. SMG | ALL DIMENSIONS ARE IN MM.

CLIENT: BHARAT HEAVY ELECTRICAL LTD
POWER SECTOR
PROJECT ENGINEERING MANAGEMENT
NEW DELHI
BHEL DRG NO. : PE-V0-437-501-A517

FAFECO

DESCRIPTION: 250-50-10T x 21M POWER HOUSE CRANE (CRANE-1&2)
TITLE : SCHEMATIC CIRCUIT DIAGRAM BOM OF CROSS TRAVEL PANEL

FURNACE & FOUNDRY EQUIPMENT CO.
CHANDIVALI FARM MUMBAI - 72
FAFECO DRG NO.: OG-06/250-50-10Tx21M/201

Sheet 35/65

A3.dwg

THIS IS PART OF TECHNICAL SPECIFICATION PE-TS-437-501-A001/A REV 0

CROSS TRAVEL

Device Tag	Quantity	Material Description	Technical Description	Make	Location
4lb1	1	`CROSS TRAVEL' SPRING RETURN TYPE MASTER CONTROLLER	STEP: 4, CAMS: 6, Amp:10A	EMM/KAKKU/SOC	IN CABIN
4Pb1	1	`CT-FOR' PUSH BUTTON	10A, 2NO (BLACK)	SIEMENS	ON CRANE PUSH BOTTON STATION
4Pb2	1	`CT-REV' PUSH BUTTON	10A, 2NO (WHITE)	SIEMENS	ON CRANE PUSH BOTTON STATION
4SPS1	1	SELECTOR SWITCH FOR SPEED SELECTION -CT - 5%, 50%, 100%	10A, 3 POSITION, 2NO+2NC	SIEMENS/KAYCEE	ON CRANE PUSH BOTTON STATION
K10,K11, K12	3	POTENTIAL FREE CONTACTS OF PENDANT RADIO REMOTE CONTROL PANEL FOR AHP	POTENTIAL FREE RELAY, 110V.AC	SNT/REPUTED	IN REMOTE PANEL

THIS IS PART OF TECHNICAL SPECIFICATION PE-TS-437-501-A001/A REV 0

Issue	Remarks	Name	Date

Prep. DINESH
Ckd. ABHAY
APPR. SMG
ALL DIMENSIONS ARE IN MM.

CLIENT
BHARAT HEAVY ELECTRICAL LTD
POWER SECTOR
PROJECT ENGINEERING MANAGEMENT
NEW DELHI
BHEL DRG NO. : PE-V0-437-501-A517

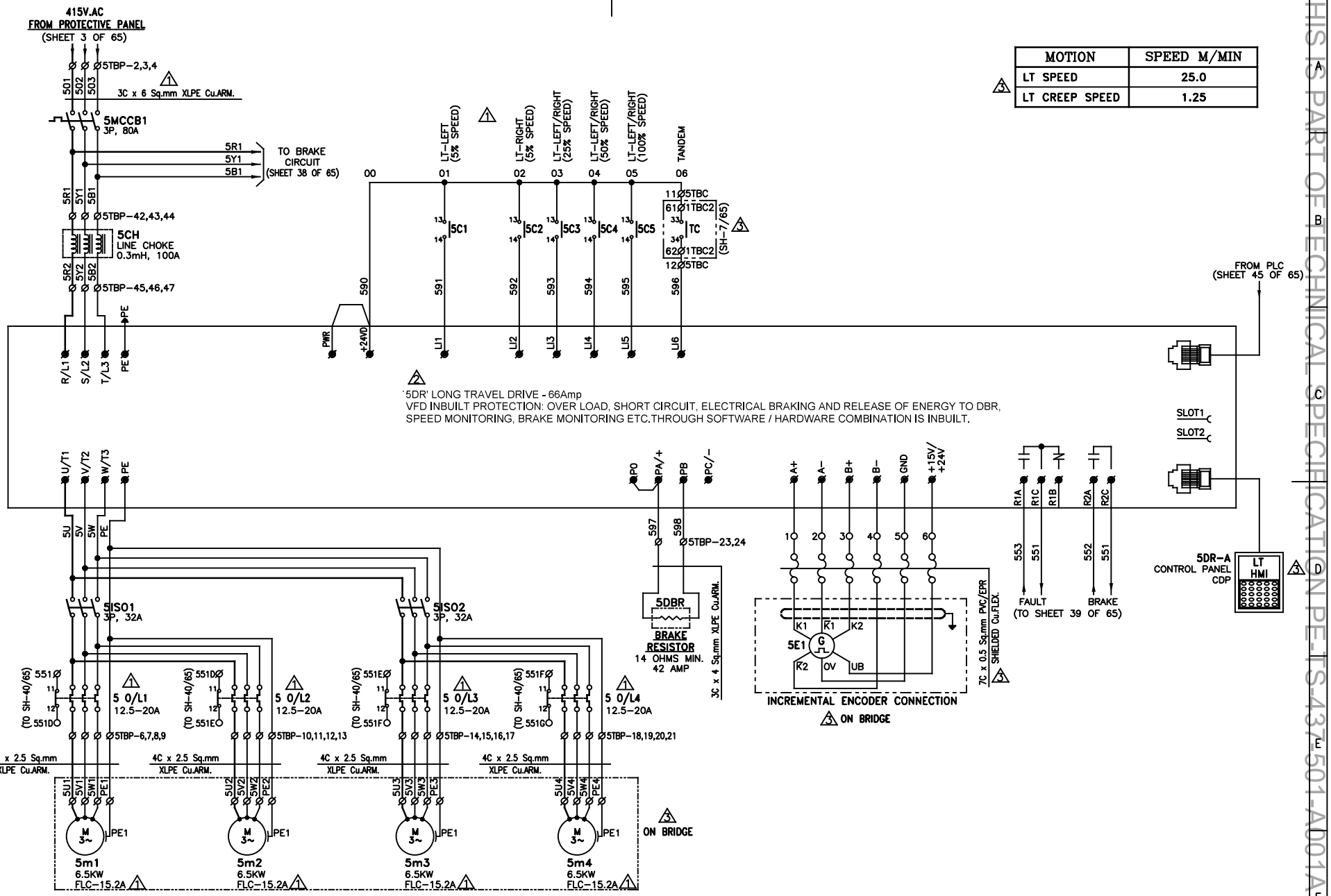
FAFECO

DESCRIPTION: 250-50-10T x 21M POWER HOUSE CRANE (CRANE-1&2)
TITLE : SCHEMATIC CIRCUIT DIAGRAM BOM OF CROSS TRAVEL PANEL

FURNACE & FOUNDRY EQUIPMENT CO.
CHANDIVALI FARM MUMBAI - 72
FAFECO DRG NO.: OG-06/250-50-10Tx21M/201

Sheet 36/65

A3.dwg



MOTION	SPEED M/MIN
LT SPEED	25.0
LT CREEP SPEED	1.25

Issue	Remarks	Name	Date
3	REVISED AS NOTED	DP	19.11.2019
2	REVISED AS NOTED	DP	30.09.2019
1	REVISED AS NOTED	DP	07.09.2019

Prep. DINESH | Ckd. ABHAY | APPR. SMG | ALL DIMENSIONS ARE IN MM.

CLIENT: BHARAT HEAVY ELECTRICAL LTD
POWER SECTOR
PROJECT ENGINEERING MANAGEMENT
NEW DELHI
BHEL DRG NO. : PE-V0-437-501-A517

FAFECO

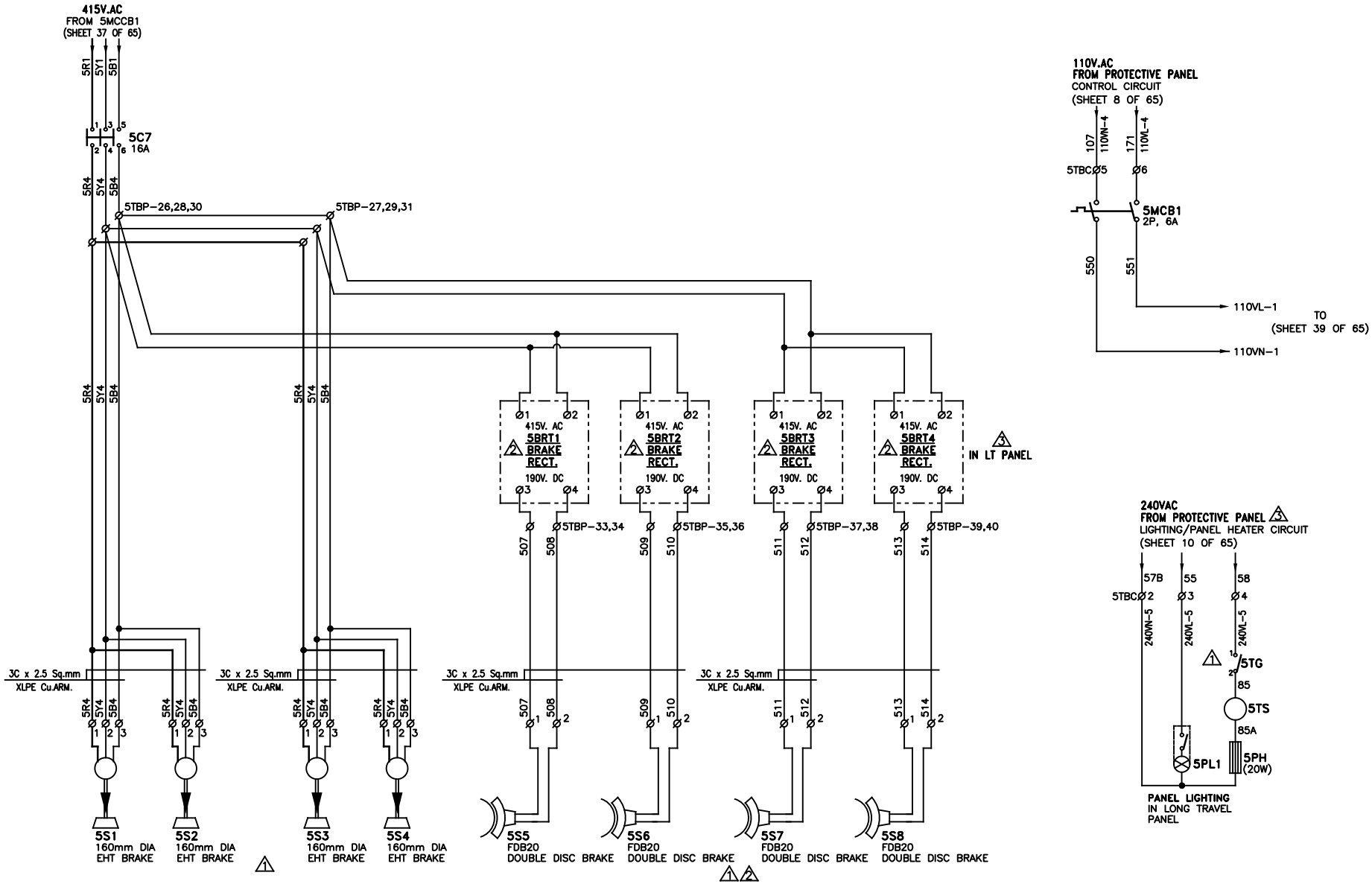
DESCRIPTION: 250-50-10T x 21M POWER HOUSE CRANE (CRANE-1&2)
TITLE : SCHEMATIC CIRCUIT DIAGRAM BOM OF LONG TRAVEL PANEL

FURNACE & FOUNDRY EQUIPMENT CO.
CHANDIVALI FARM MUMBAI - 72
FAFECO DRG NO.: OG-06/250-50-10Tx21M/201

Sheet 37/65

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Issue	Remarks	Name	Date
3	REVISED AS NOTED	DP	19.11.2019
2	REVISED AS NOTED	DP	30.09.2019
1	REVISED AS NOTED	DP	07.09.2019

Prep. DINESH | Ckd. ABHAY | APPR. SMG | ALL DIMENSIONS ARE IN MM.

CLIENT: BHARAT HEAVY ELECTRICAL LTD
POWER SECTOR
PROJECT ENGINEERING MANAGEMENT
NEW DELHI
BHEL DRG NO. : PE-V0-437-501-A517

FAFECO

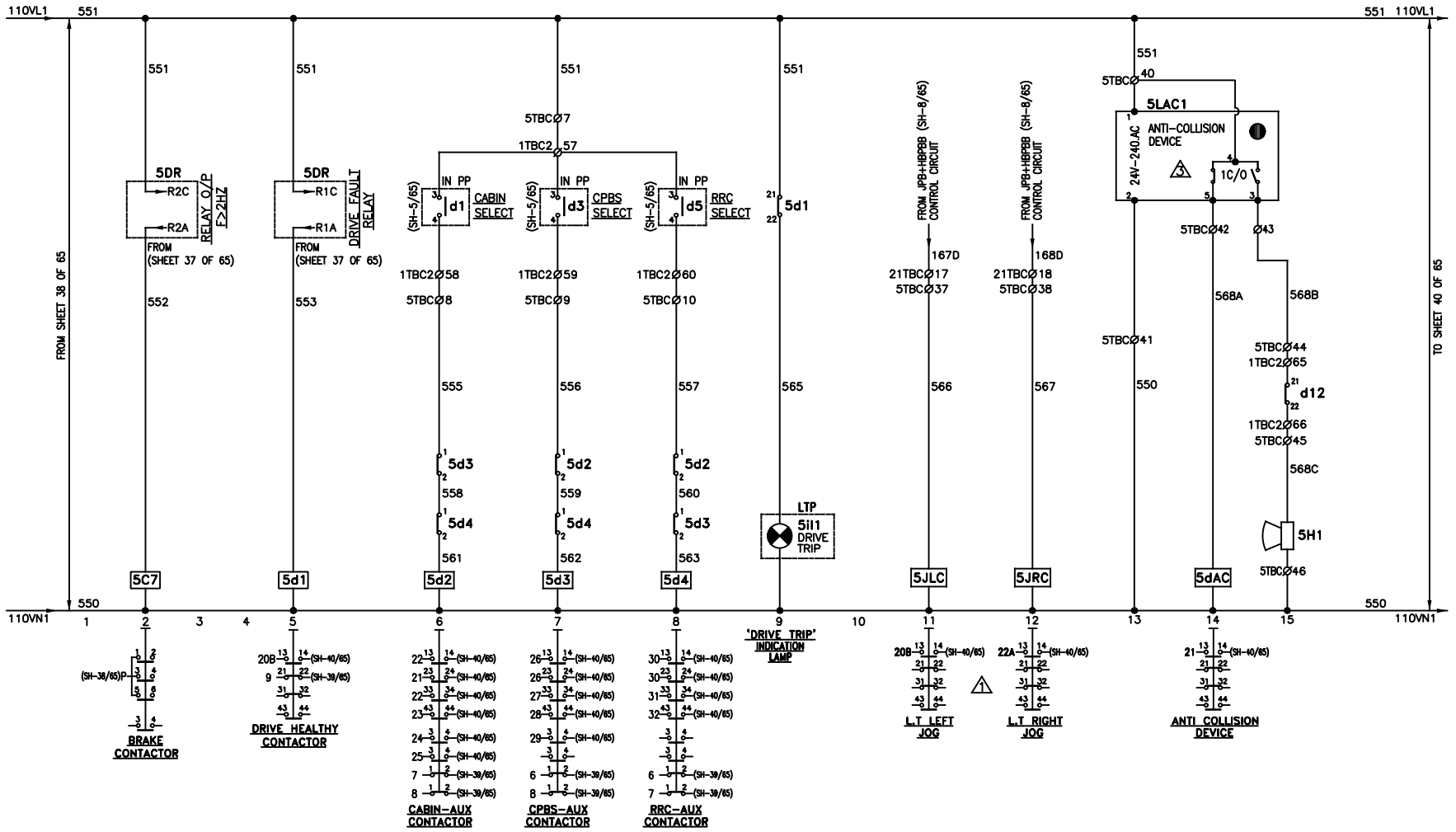
DESCRIPTION: 250-50-10T x 21M POWER HOUSE CRANE (CRANE-1&2)
TITLE : SCHEMATIC CIRCUIT DIAGRAM BOM OF LONG TRAVEL PANEL

FURNACE & FOUNDRY EQUIPMENT CO.
CHANDIVALI FARM MUMBAI - 72
FAFECO DRG NO.: OG-06/250-50-10Tx21M/201

Sheet 38/65

A3.dwg

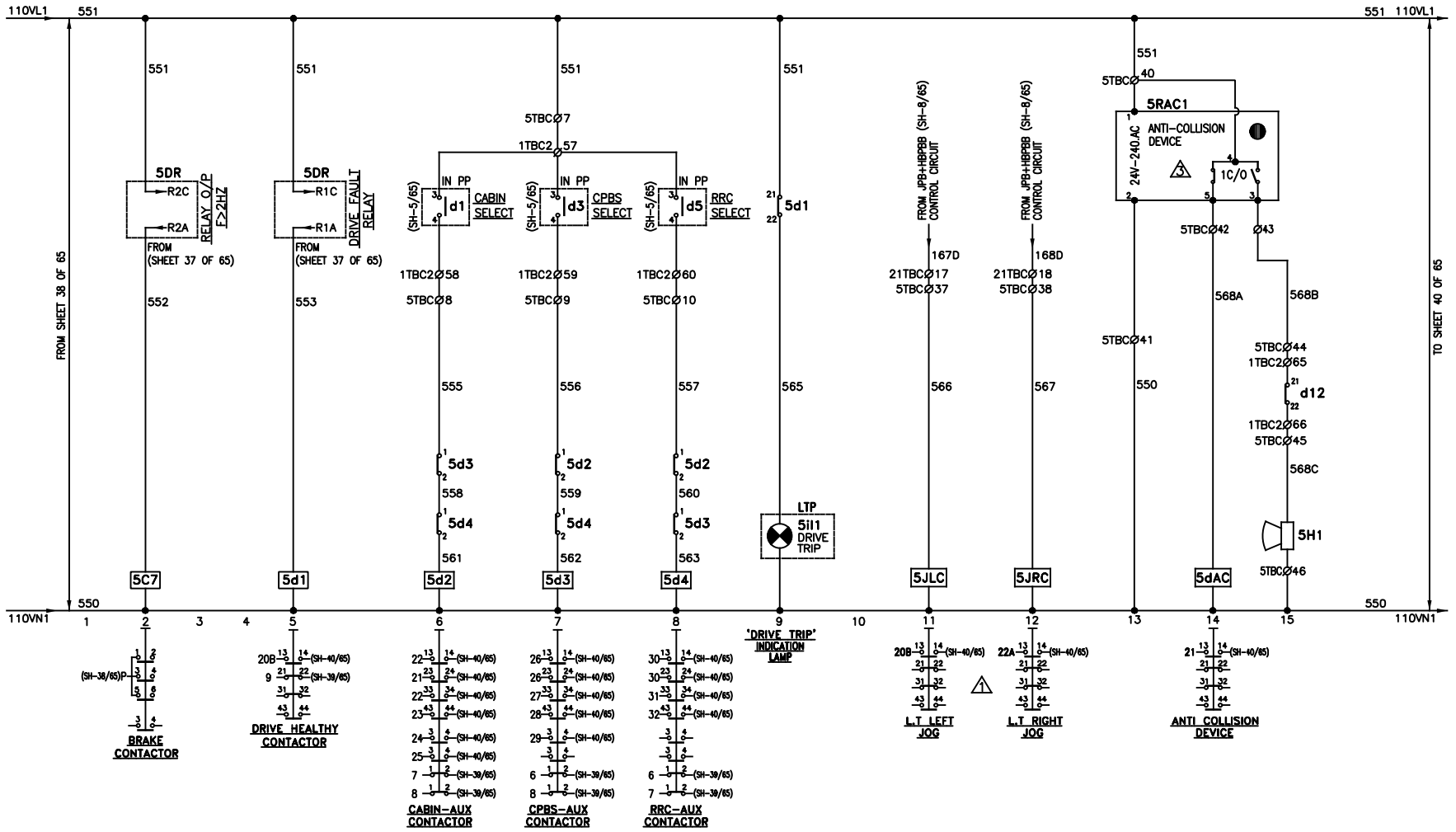
THIS IS PART OF TECHNICAL SPECIFICATION PE-TS-437-501-A001/A REV 0



3	REVISED AS NOTED	DP	19.11.2019	Prep.	DINESH	CLIENT	BHARAT HEAVY ELECTRICAL LTD POWER SECTOR PROJECT ENGINEERING MANAGEMENT NEW DELHI	FAFECO	DESCRIPTION: 250-50-10T x 21M POWER HOUSE CRANE (CRANE-1)	FURNACE & FOUNDRY EQUIPMENT CO. CHANDIVALI FARM MUMBAI - 72	Sheet 39/65
3	REVISED AS NOTED	DP	19.11.2019	Ckd.	ABHAY						
1	REVISED AS NOTED	DP	07.09.2019	APPR.	SMG				TITLE : SCHEMATIC CIRCUIT DIAGRAM BOM OF LONG TRAVEL PANEL	FAFECO DRG NO.: OG-06/250-50-10Tx21M/201	
Issue	Remarks	Name	Date	ALL DIMENSIONS ARE IN MM.		BHEL DRG NO. : PE-V0-437-501-A517					

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Issue	Remarks	Name	Date
3	REVISED AS NOTED	DP	19.11.2019
3	REVISED AS NOTED	DP	19.11.2019
1	REVISED AS NOTED	DP	07.09.2019

Prep. DINESH
Ckd. ABHAY
APPR. SMG
ALL DIMENSIONS ARE IN MM.

CLIENT
BHARAT HEAVY ELECTRICAL LTD
POWER SECTOR
PROJECT ENGINEERING MANAGEMENT
NEW DELHI
BHEL DRG NO. : PE-V0-437-501-A517

FAFECO

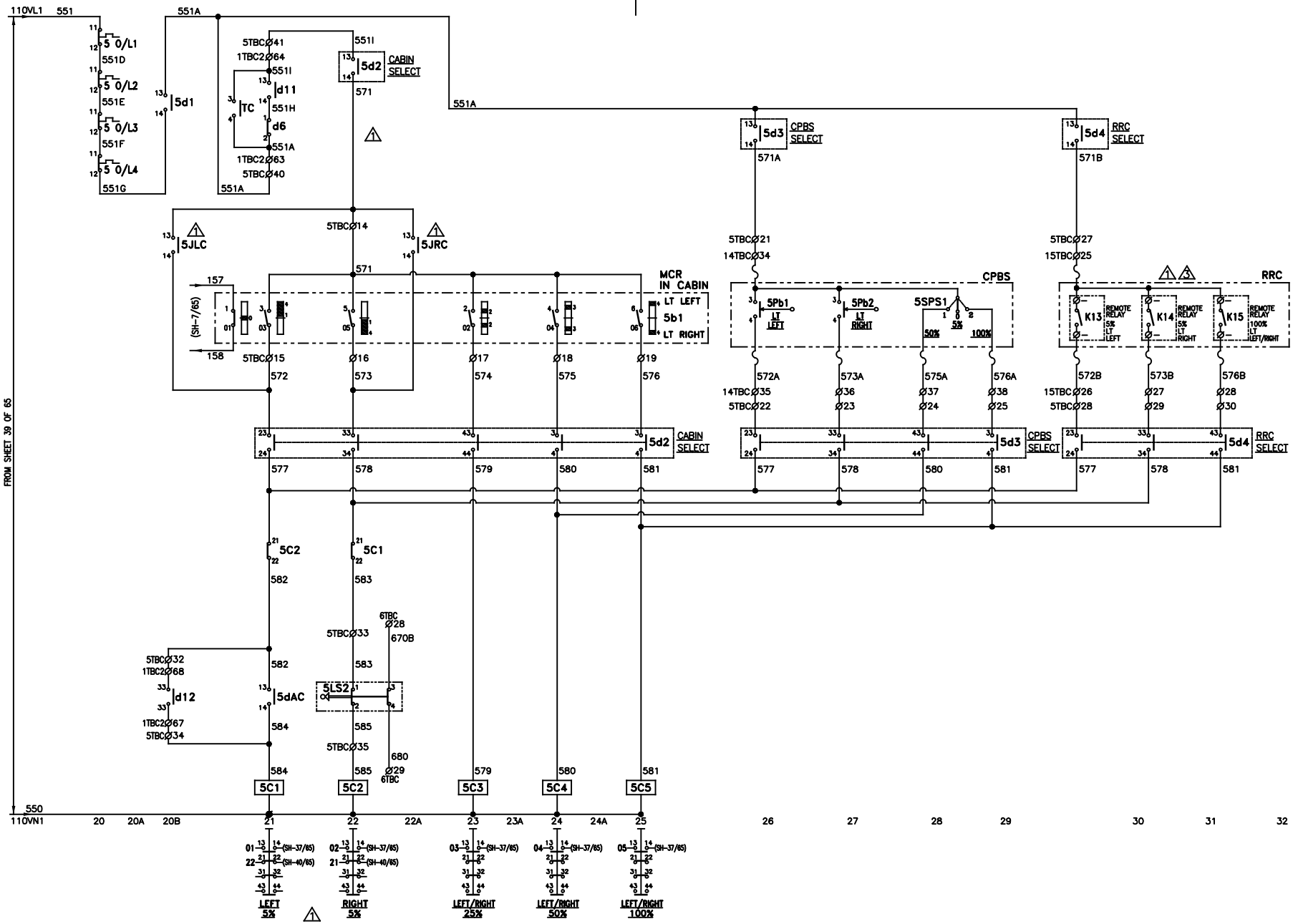
DESCRIPTION: 250-50-10T x 21M POWER HOUSE CRANE (CRANE-2)
TITLE : SCHEMATIC CIRCUIT DIAGRAM BOM OF LONG TRAVEL PANEL

FURNACE & FOUNDRY EQUIPMENT CO.
CHANDIVALI FARM MUMBAI - 72
FAFECO DRG NO.: OG-06/250-50-10Tx21M/201

Sheet 39A / 65

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Issue	Remarks	Name	Date
3	REVISED AS NOTED	DP	19.11.2019
1	REVISED AS NOTED	DP	07.09.2019

Prep. DINESH
Ckd. ABHAY
APPR. SMG
ALL DIMENSIONS ARE IN MM.

CLIENT

BHARAT HEAVY ELECTRICAL LTD
POWER SECTOR
PROJECT ENGINEERING MANAGEMENT
NEW DELHI

BHEL DRG NO. : PE-V0-437-501-A517

FAFECO

DESCRIPTION: 250-50-10T x 21M POWER HOUSE CRANE (CRANE-1)

TITLE : SCHEMATIC CIRCUIT DIAGRAM BOM OF LONG TRAVEL PANEL

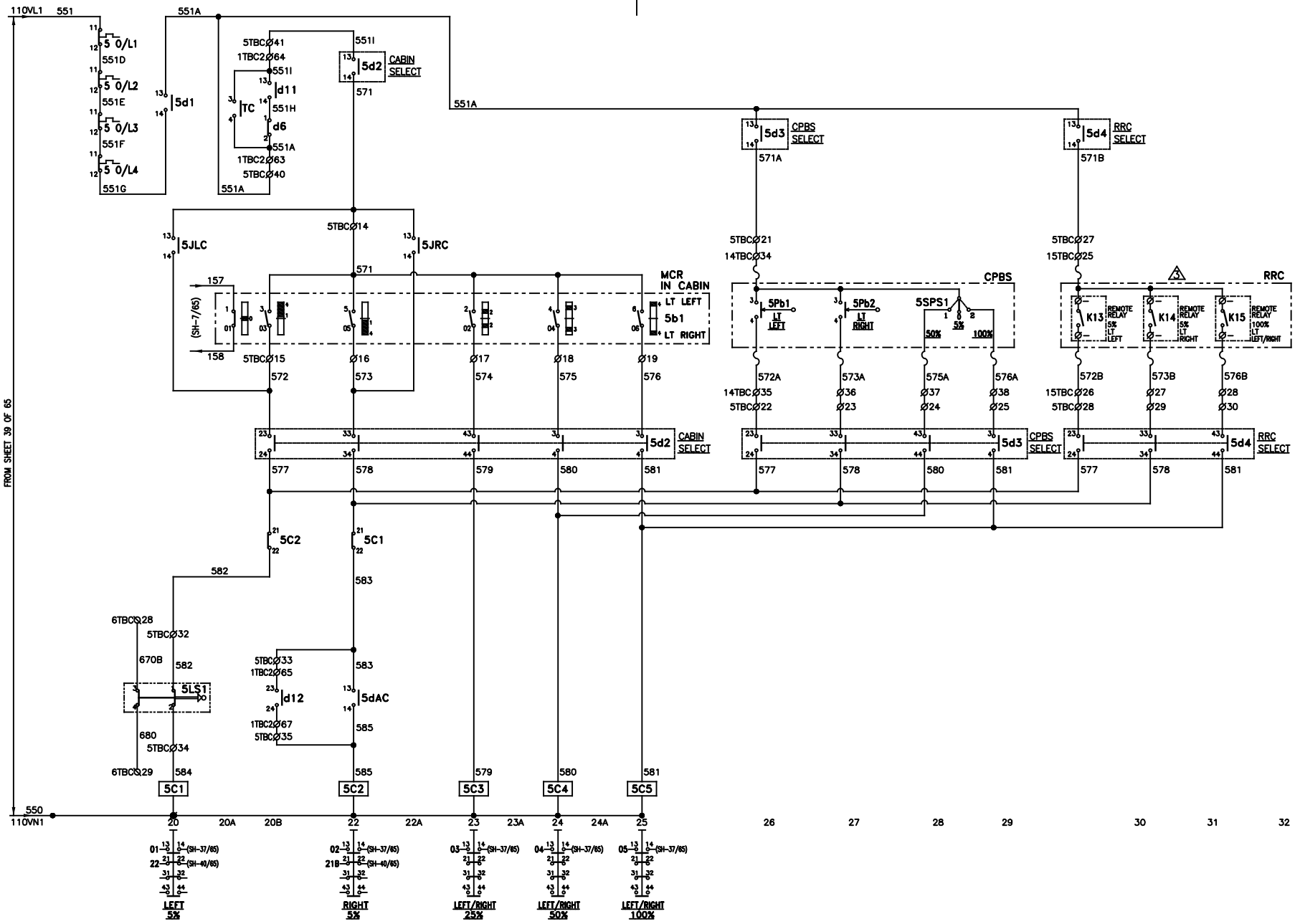
FURNACE & FOUNDRY EQUIPMENT CO.
CHANDIVALI FARM MUMBAI - 72

FAFECO DRG NO.: OG-06/250-50-10Tx21M/201

Sheet 40/65

A3.dwg

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Issue	Remarks	Name	Date
3	REVISED AS NOTED	DP	19.11.2019

Prep. DINESH
Ckd. ABHAY
APPR. SMG
ALL DIMENSIONS ARE IN MM.

CLIENT

BHARAT HEAVY ELECTRICAL LTD
POWER SECTOR
PROJECT ENGINEERING MANAGEMENT
NEW DELHI

BHEL DRG NO. : PE-V0-437-501-A517

FAFECO

DESCRIPTION: 250-50-10T x 21M POWER HOUSE CRANE (CRANE-2)

TITLE : SCHEMATIC CIRCUIT DIAGRAM BOM OF LONG TRAVEL PANEL

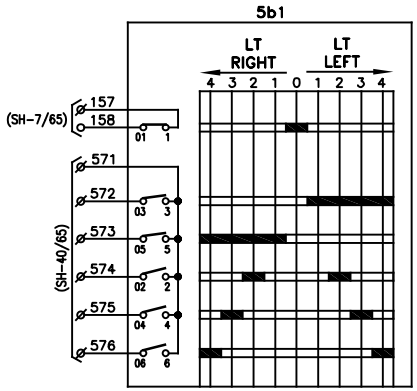
FURNACE & FOUNDRY EQUIPMENT CO.
CHANDIVALI FARM MUMBAI - 72

FAFECO DRG NO.: OG-06/250-50-10Tx21M/201

Sheet 40A / 65

A3.dwg

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CONTROLLER SEQUENCE

MASTER CONTROLLER	CONTACTORS		5C1	5C2	5C3	5C4	5C5	5C7
	LT LEFT	4	○				○	○
		3	○			○		○
		2	○		○			○
		1	○					○
	OFF	0						
	LT RIGHT	1		○				○
		2		○	○			○
		3		○		○		○
		4		○			○	○

CONTACTORS SEQUENCE

○ CONTACTORS ENERGISED.

NOTE: FOR PUSH BUTTON OPERATION

PUSH BUTTON	SPEED	CONTACTORS 5C7	5C1	5C2	5C3	5C4	5C5
5Pb1	100%	○	○				○
	50%	○	○			○	
	5%	○	○				
⚠3 OFF							
5Pb2	5%	○		○			
	50%	○		○		○	
	100%	○		○			○

CONTACTORS SEQUENCE

○ CONTACTORS ENERGISED

⚠3 NOTE: FOR REMOTE OPERATION

RELAY K13:- FOR LT LEFT-5%
RELAY K14:- FOR LT RIGHT-5%
RELAY K15:- FOR LT LEFT/RIGHT-100%

				Prep.	DINESH	CLIENT	BHARAT HEAVY ELECTRICAL LTD POWER SECTOR PROJECT ENGINEERING MANAGEMENT NEW DELHI	FAFECO	DESCRIPTION: 250-50-10T x 21M POWER HOUSE CRANE (CRANE-1&2)	FURNACE & FOUNDRY EQUIPMENT CO. CHANDIVALI FARM MUMBAI - 72	Sheet 41/65
				Ckd.	ABHAY					
3	REVISED AS NOTED	DP	19.11.2019	APPR.	SMG					
Issue	Remarks	Name	Date	ALL DIMENSIONS ARE IN MM.		BHEL DRG NO. : PE-V0-437-501-A517		TITLE : SCHEMATIC CIRCUIT DIAGRAM BOM OF LONG TRAVEL PANEL	FAFECO DRG NO.: OG-06/250-50-10Tx21M/201	

THIS IS PART OF TECHNICAL SPECIFICATION PE-TS-437-501-A001/A REV 0

A3.dwg

LONG TRAVEL

Device Tag	Quantity	Material Description	Technical Description	Make	Location
5m1-4	4	LONG TRAVEL MOTORS	6.5 MOTOR KW, 6 POLE, 40% CDF, CL-F FRAME: 132M (MOTOR FLC : 15.2A.) TYPE: SQ.CAGE	CGL/MARATHON/SIEMENS	ON BRIDGE
5S1-4	4	LONG TRAVEL BRAKES-1-4	BRAKE DIA: 160, TYPE: EHT	EMM/SOC	ON BRIDGE
2 5S5-8+ 5BRT1-4	4	LONG TRAVEL BRAKES-5-8	TYPE: FDB20, DISC BRAKE WITH RECTIFIER	EMM/SOC/PATHE/KAKKU	ON BRIDGE
3 5LAC1-CR1 5RAC1-CR2	1	LONG TRAVEL LEFT SIDE ANTI-COLLISION DEVICE	IP: 24V-240V, 3A, OP: 1C/O, SENSING RANGE: 0.1m-5m	AUTONIX/SICK/REPUTED	ON END CARRIAGE
3 5LS2-CR1 5LS1-CR2	1	LONG TRAVEL LIMIT SWITCH	TYPE: 1 WAY ROLLER LEVER, 10A, 2NC	EMM/SOC	ON END CARRIAGE
3 5E1	1	LONG TRAVEL ENCODER (INCREMENTAL TYPE)	TYPE: EIL580-TT10.5BN.01024.A	HUBNER/REPUTED	ON BRIDGE
5DBR	1	LONG TRAVEL DYNAMIC BREAKING RESISTOR	14 OHMS MIN., 42AMP	EMM/YESDEE	ON BRIDGE
5DR	1	LONG TRAVEL DRIVE	415V.AC, 30 KW, 66A. TYPE: ATV71HD30N4	SCHNEIDER/ABB/SIEMENS	IN PANEL
5CH	1	LONG TRAVEL LINE CHOKE	0.3mH, 100A	NEC	IN PANEL
2 5MCCB1	1	MOULDED CASE CIRCUIT BREAKER	415V.AC, 3POLE, 80A., 25KA, S/C, O/L PROTECTION	SIEMENS	IN PANEL
5ISO1-2	2	ISOLATING SWITCH UNIT FOR MOTOR 1-2 & MOTOR 3-4	3POLE, 415V, 32A	SIEMENS	IN PANEL
5MCB1	1	MINIATURE CIRCUIT BREAKER	2POLE, 6A	SIEMENS	IN PANEL
5C7	1	BRAKE CONTACTOR	COIL:110V., 16A., 3P, ADD ON - 1NO	SIEMENS	IN PANEL
5C1-5	5	AUX CONTACTORS	COIL:110V., 10A., 2NO+2NC	SIEMENS	IN PANEL
5d1	1	AUX CONTACTOR	COIL:110V., 10A., 2NO+2NC	SIEMENS	IN PANEL
5d2-5d4	3	AUX CONTACTORS	COIL:110V., 10A., 4NO, ADD ON-2NO,2NC	SIEMENS	IN PANEL
5JLC-5JRC	2	AUX CONTACTORS	COIL:110V., 10A., 2NO+2NC	SIEMENS	IN PANEL
5dAC	1	AUX CONTACTORS	COIL:110V., 10A., 2NO+2NC	SIEMENS	IN PANEL
5 O/L1-4	4	OVER LOAD RELAY FOR MOTOR	COIL:110V., TYPE: THERMAL, RANGE: 12.5-20A	SIEMENS	IN PANEL
5PL1	1	PANEL LIGHT WITH SWITCH	240V., 2.5W, TYPE: LED	DSS	IN PANEL
5TS	1	THERMOSTAT FOR `5PH'	240V.AC, 0-80	VILECO/REPUTED	IN PANEL
5PH	1	PANEL HEATER	240V.AC, 20W.	VILECO/REPUTED	IN PANEL
5TG	1	TOGGLE SWITCH FOR 1TS	240V.AC, 10A.	KAYCEE	IN PANEL
5I1	1	LONG TRAVEL DRIVE TRIP	LED INDICATING LAMP (AMBER), 110V.AC	SIEMENS	ON PANEL DOOR

Issue	Remarks	Name	Date
3	REVISED AS NOTED	DP	19.11.2019
2	REVISED AS NOTED	DP	30.09.2019
1	REVISED AS NOTED	DP	07.09.2019

Prep. DINESH | Ckd. ABHAY | APPR. SMG | ALL DIMENSIONS ARE IN MM.

CLIENT: BHARAT HEAVY ELECTRICAL LTD, POWER SECTOR, PROJECT ENGINEERING MANAGEMENT, NEW DELHI

BHEL DRG NO. : PE-V0-437-501-A517

FAFECO

DESCRIPTION: 250-50-10T x 21M POWER HOUSE CRANE (CRANE-1&2)

TITLE : SCHEMATIC CIRCUIT DIAGRAM BOM OF LONG TRAVEL PANEL

FURNACE & FOUNDRY EQUIPMENT CO.
CHANDIVALI FARM MUMBAI - 72

FAFECO DRG NO.: OG-06/250-50-10Tx21M/201

Sheet 42/65

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LONG TRAVEL

Device Tag	Quantity	Material Description	Technical Description	Make	Location
5b1	1	`LONG TRAVEL' SPRING RETURN TYPE MASTER CONTROLLER	STEP: 4, CAMS: 6, Amp:10A	EMM/KAKKU/SOC	IN CABIN
5Pb1	1	`LT-LEFT' PUSH BUTTON	10A, 2NO (BLACK)	SIEMENS	ON CRANE PUSH BOTTON STATION
5Pb2	1	`LT-RIGHT' PUSH BUTTON	10A, 2NO (WHITE)	SIEMENS	ON CRANE PUSH BOTTON STATION
5SPS1	1	SELECTOR SWITCH FOR SPEED SELECTION -LT - 5%, 50%, 100%	10A, 3 POSITION, 2NO+2NC	SIEMENS/KAYCEE	ON CRANE PUSH BOTTON STATION
K13, K14, K15	3	POTENTIAL FREE CONTACTS OF PENDANT RADIO REMOTE CONTROL PANEL FOR AHP	POTENTIAL FREE RELAY, 110V.AC	SNT/REPUTED	IN REMOTE PANEL
5TBS1	1	`TANDEMBYPASS' SELECTOR SWITCH FOR `5AC1' (LEFT) CRANE-1	10A, 2 POSITION, 2POLE, 1NO+1NC	SIEMENS	PUSH BOTTON+ LIGHTING D.BOARD
5IBPb	1	`INDIVIDUAL BYPASS' PUSH BUTTON FOR `5AC1' (LEFT) CRANE-1	10A, 1NO + 1NC (BLACK)	SIEMENS	PUSH BOTTON+ LIGHTING D.BOARD
5H1	1	ELECTRICAL HOOTER FOR ANTI COLLISION DEVICE TRIP	110V.AC	KHERAJ/REPUTED	OUTSIDE CABIN

THIS IS PART OF TECHNICAL SPECIFICATION PE-TS-437-501-A001/A REV 0

Issue	Remarks	Name	Date

Prep. DINESH
Ckd. ABHAY
APPR. SMG
ALL DIMENSIONS ARE IN MM.

CLIENT: BHARAT HEAVY ELECTRICAL LTD
POWER SECTOR
PROJECT ENGINEERING MANAGEMENT
NEW DELHI
BHEL DRG NO. : PE-V0-437-501-A517

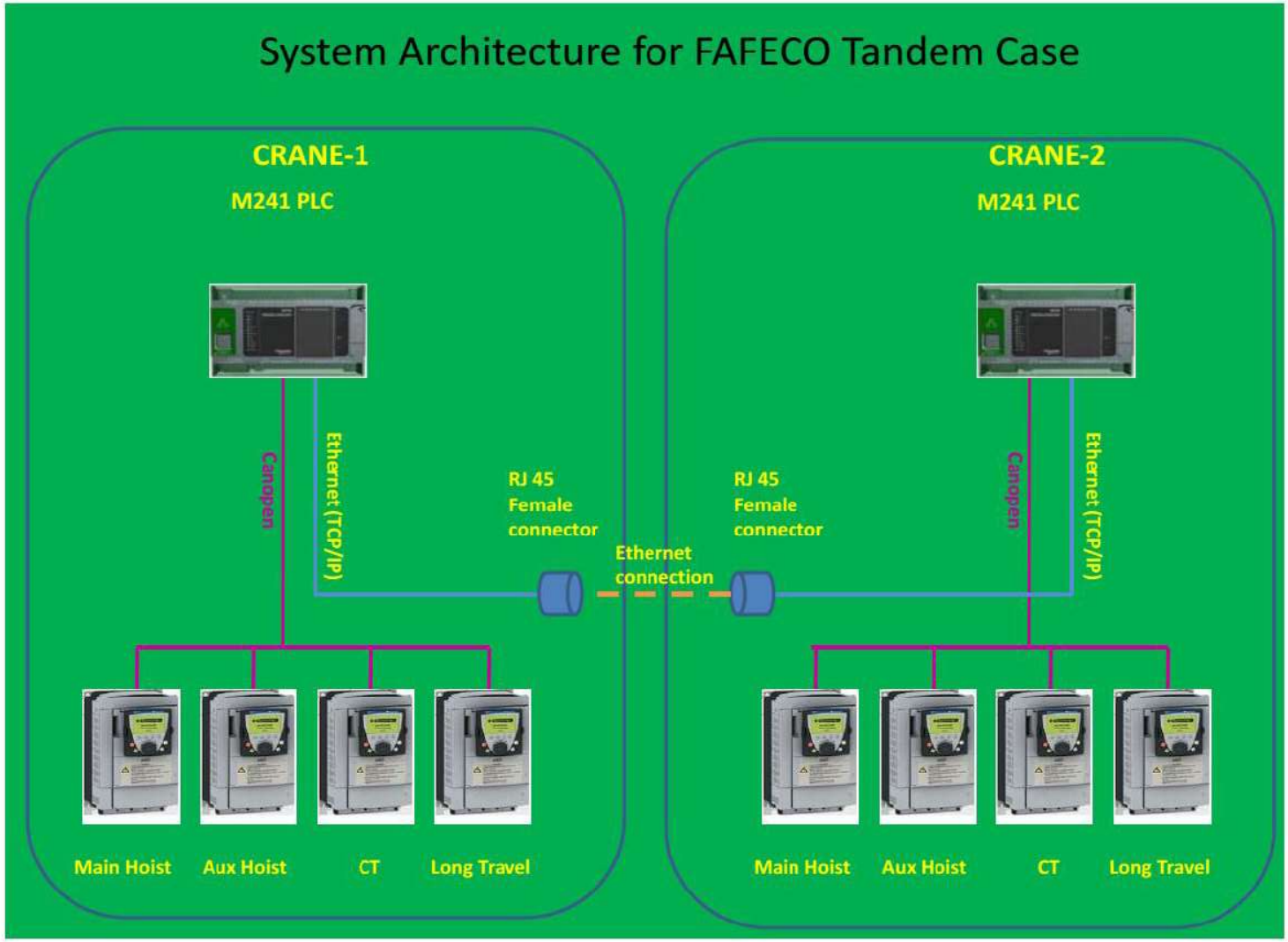
FAFECO

DESCRIPTION: 250-50-10T x 21M POWER HOUSE CRANE (CRANE-1&2)
TITLE : SCHEMATIC CIRCUIT DIAGRAM BOM OF LONG TRAVEL PANEL

FURNACE & FOUNDRY EQUIPMENT CO.
CHANDIVALI FARM MUMBAI - 72
FAFECO DRG NO.: OG-06/250-50-10Tx21M/201

Sheet 43/65

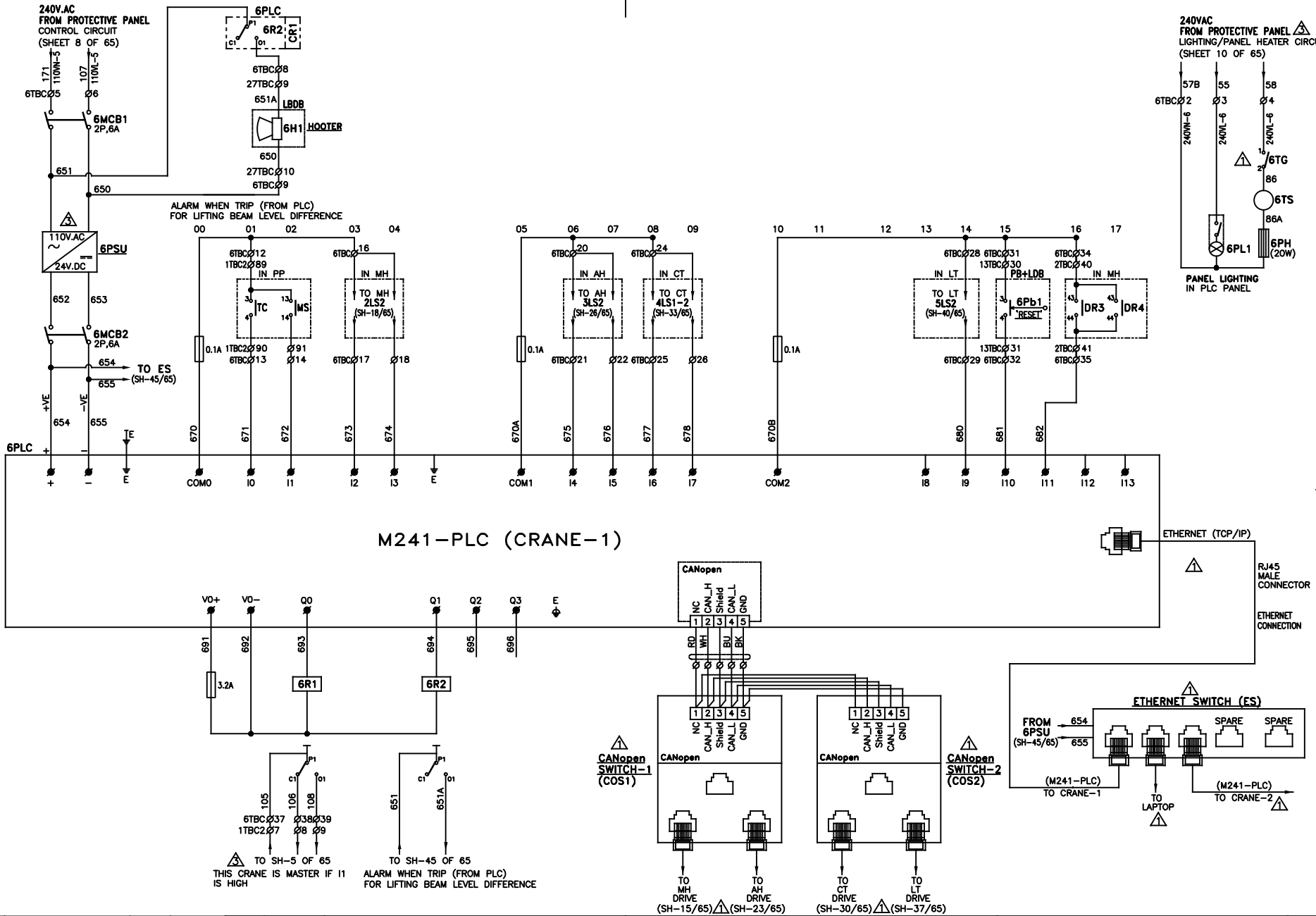
A3.dwg



				Prep.	DINESH	CLIENT	BHARAT HEAVY ELECTRICAL LTD POWER SECTOR PROJECT ENGINEERING MANAGEMENT NEW DELHI	FAFECO	DESCRIPTION: 250-50-10T x 21M POWER HOUSE CRANE (CRANE-1&2)	FURNACE & FOUNDRY EQUIPMENT CO. CHANDIVALI FARM MUMBAI - 72	Sheet 44/65
				Ckd.	ABHAY					
-	-	-	-	APPR.	SMG			TITLE : SYSTEM ARCHITECTURE FOR TANDEM OPRATION CRANE-1&2	FAFECO DRG NO.: OG-06/250-50-10Tx21M/201	
Issue	Remarks	Name	Date	ALL DIMENSIONS ARE IN MM.		BHEL DRG NO. : PE-V0-437-501-A517				

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Issue	Remarks	Name	Date
3	REVISED AS NOTED	DP	21.11.2019
1	REVISED AS NOTED	DP	07.09.2019

Prep. DINESH
Ckd. ABHAY
APPR. SMG
ALL DIMENSIONS ARE IN MM.

CLIENT: BHARAT HEAVY ELECTRICAL LTD
POWER SECTOR
PROJECT ENGINEERING MANAGEMENT
NEW DELHI
BHEL DRG NO. : PE-V0-437-501-A517

FAFECO

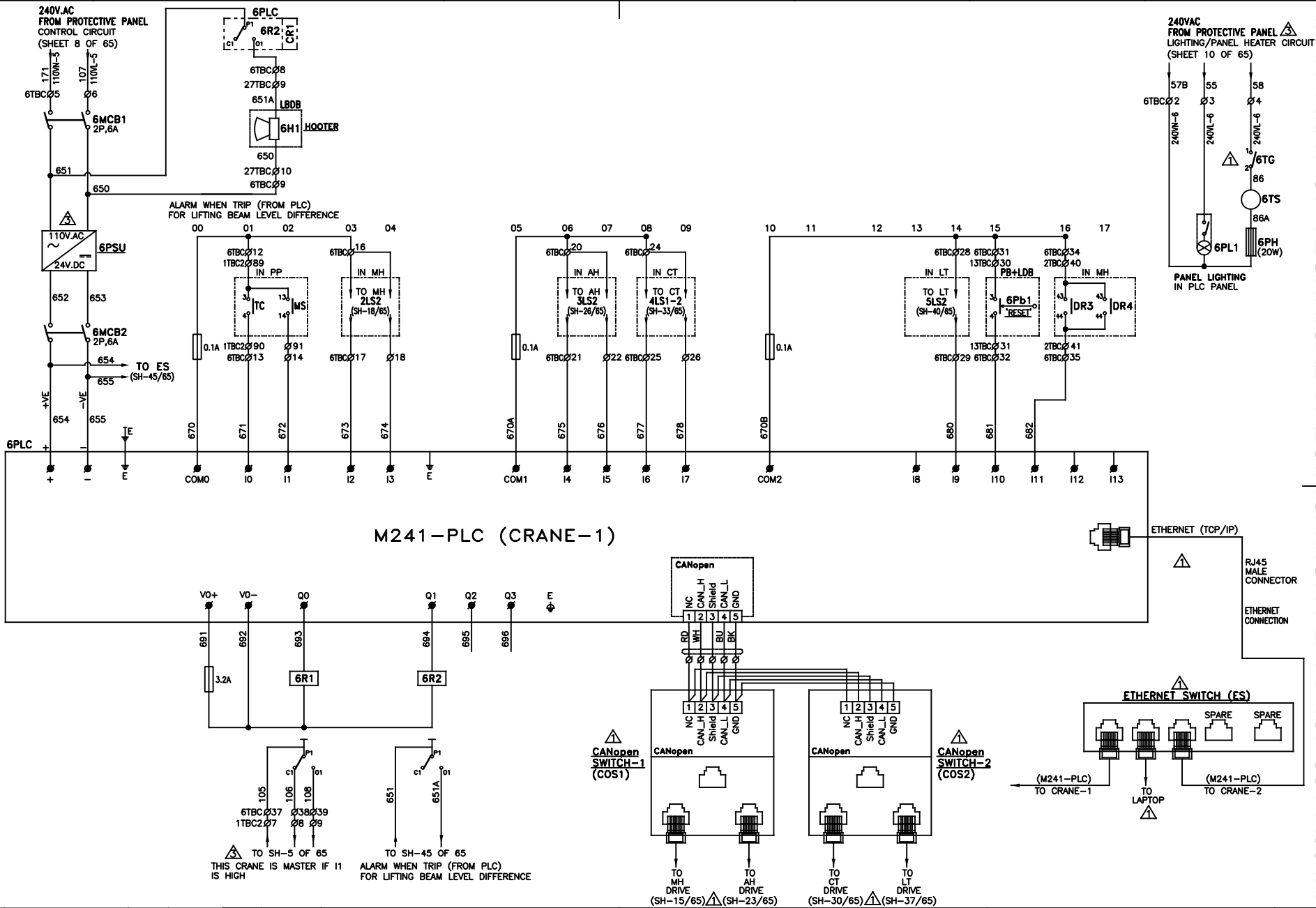
DESCRIPTION: 250-50-10T x 21M
POWER HOUSE CRANE
(CRANE-1)
TITLE : SCHEMATIC CIRCUIT DIAGRAM
BOM OF PLC PANEL

FURNACE & FOUNDRY EQUIPMENT CO.
CHANDIVALI FARM MUMBAI - 72
FAFECO DRG NO.: OG-06/250-50-10Tx21M/201

Sheet 45/65

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Issue	Remarks	Name	Date
3	REVISED AS NOTED	DP	21.11.2019
1	REVISED AS NOTED	DP	07.09.2019

Prep. DINESH
Ckd. ABHAY
APPR. SMG
ALL DIMENSIONS ARE IN MM.

CLIENT
BHARAT HEAVY ELECTRICAL LTD
POWER SECTOR
PROJECT ENGINEERING MANAGEMENT
NEW DELHI
BHEL DRG NO. : PE–V0–437–501–A517

FAFECO

DESCRIPTION: 250–50–10T x 21M
POWER HOUSE CRANE
(CRANE–2)
TITLE : SCHEMATIC CIRCUIT DIAGRAM
BOM OF PLC PANEL

FURNACE & FOUNDRY EQUIPMENT CO.
CHANDIVALI FARM MUMBAI – 72
FAFECO DRG NO.: OG–06/250–50–10Tx21M/201

Sheet 45A / 65

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PLC TRAVEL					
Device Tag	Quantity	Material Description	Technical Description	Make	Location
6MCB1	1	MINIATURE CIRCUIT BREAKER	2POLE, 6A	SIEMENS	IN PANEL
6MCB2	1	MINIATURE CIRCUIT BREAKER	2POLE, 6A	SIEMENS	IN PANEL
6PSU	1	POWER SUPPLY UNIT FOR PLC	I/P-110V.AC, O/P-24V.DC/5A	SIEMENS/REPUTED	IN PANEL
6PLC	1	TANDEM PLC	M241-PLC, TYPE: TM241CEC24T	SCHNEIDER	IN PANEL
COS1-2	2	CANopen SWITCH-1&2	TYPE: VW3CANTAP2	SCHNEIDER	IN PANEL
6R1-2	2	OEN RELAY	24V.DC, RATING OF CONTACTS: 5A	OMRON/REPUTED	IN PANEL
6PL1	1	PANEL LIGHT WITH SWITCH	240V., 2.5W, TYPE: LED	DSS	IN PANEL
6TS	1	THERMOSTAT FOR `6PH'	240V.AC, 0-80	VILECO/REPUTED	IN PANEL
6PH	1	PANEL HEATER	240V.AC, 20W.	VILECO/REPUTED	IN PANEL
6TG	1	TOGGLE SWITCH FOR 1TS	240V.AC, 10A.	KAYCEE	IN PANEL
ES *	1	ETHERNET SWITCH FOR COMMEN FOR CRANE 1 &2	TYPE: FL SWITCH SFNB 5TX	PHOENIX/REPUTED	IN PANEL
6H1	1	ELECTRICAL HOOTER FOR LIFTING BEAM LEVEL DIFFERENCE	110V.	KHERAJ/REPUTED	ON LIFTING BEAM D.BOARD
6Pb1	1	RESET' PUSH BUTTON FOR TRIP/ALARM	10A, 1NO+1NC (BLUE)	SIEMENS	PUSH BOTTON+ LIGHTING D.BOARD

Issue	Remarks	Name	Date
1	REVISED AS NOTED	DP	07.09.2019

Prep. DINESH
Ckd. ABHAY
APPR. SMG
ALL DIMENSIONS ARE IN MM.

CLIENT: BHARAT HEAVY ELECTRICAL LTD
POWER SECTOR
PROJECT ENGINEERING MANAGEMENT
NEW DELHI

BHEL DRG NO. : PE-V0-437-501-A517

FAFECO

DESCRIPTION: 250-50-10T x 21M POWER HOUSE CRANE (CRANE-1&2)

TITLE : SCHEMATIC CIRCUIT DIAGRAM BOM OF PLC PANEL

FURNACE & FOUNDRY EQUIPMENT CO.
CHANDIVALI FARM MUMBAI - 72

FAFECO DRG NO.: OG-06/250-50-10Tx21M/201

Sheet 46/65

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SPARE SHEET

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Issue	Remarks	Name	Date

Prep. DINESH
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ALL DIMENSIONS ARE IN MM.

CLIENT
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POWER SECTOR
PROJECT ENGINEERING MANAGEMENT
NEW DELHI
BHEL DRG NO. : PE-V0-437-501-A517

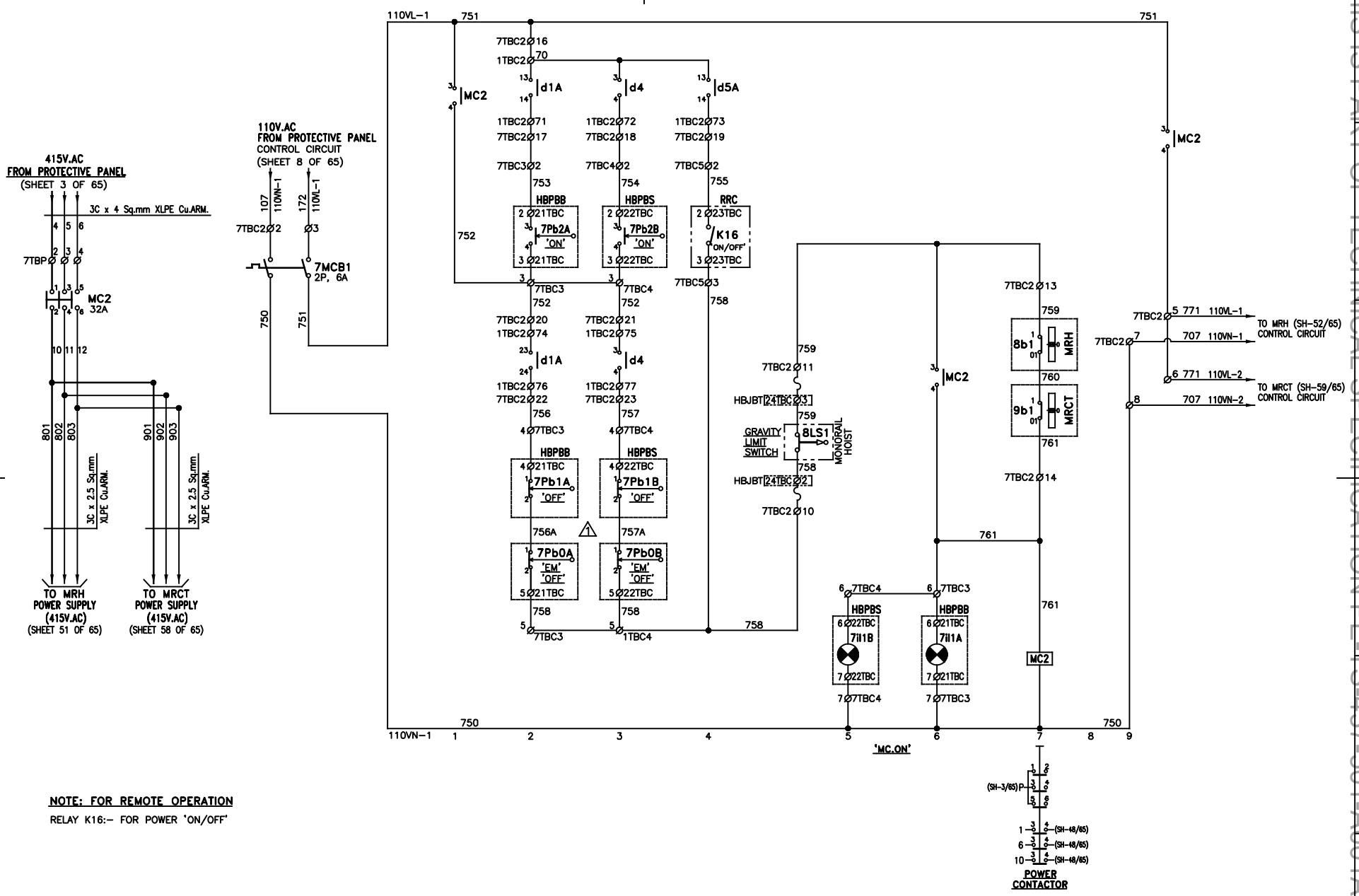
FAFECO

DESCRIPTION: 250-50-10T x 21M POWER HOUSE CRANE (CRANE-1&2)
TITLE : SCHEMATIC CIRCUIT DIAGRAM BOM OF PLC PANEL

FURNACE & FOUNDRY EQUIPMENT CO.
CHANDIVALI FARM MUMBAI - 72
FAFECO DRG NO.: OG-06/250-50-10Tx21M/201

Sheet 47 / 65

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NOTE: FOR REMOTE OPERATION

RELAY K16:– FOR POWER 'ON/OFF'

Issue	Remarks	Name	Date
3	REVISED AS NOTED	DP	21.11.2019
1	REVISED AS NOTED	DP	07.09.2019

Prep. DINESH | Ckd. ABHAY | APPR. SMG | ALL DIMENSIONS ARE IN MM.

CLIENT: BHARAT HEAVY ELECTRICAL LTD
POWER SECTOR
PROJECT ENGINEERING MANAGEMENT
NEW DELHI
BHEL DRG NO. : PE-V0-437-501-A517

FAFECO

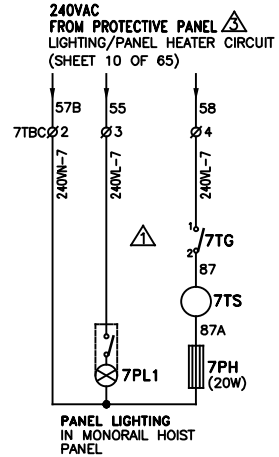
DESCRIPTION: 250-50-10T x 21M POWER HOUSE CRANE (CRANE-1&2)
TITLE : SCHEMATIC CIRCUIT DIAGRAM & BOM OF MONORAIL HOIST PROTECTIVE PANEL

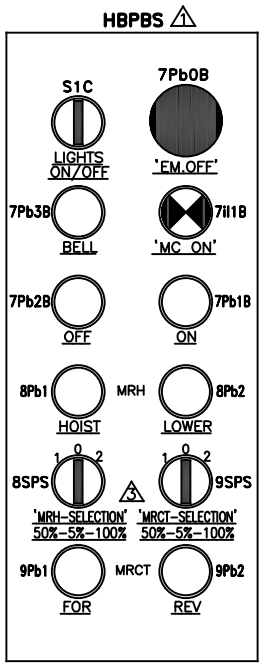
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CHANDIVALI FARM MUMBAI – 72
FAFECO DRG NO.: OG-06/250-50-10Tx21M/201

Sheet 48/65

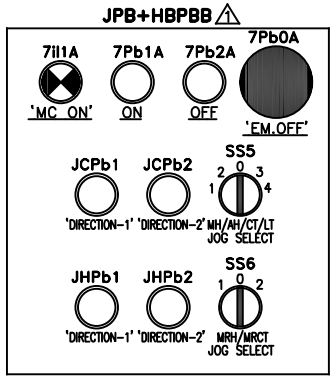
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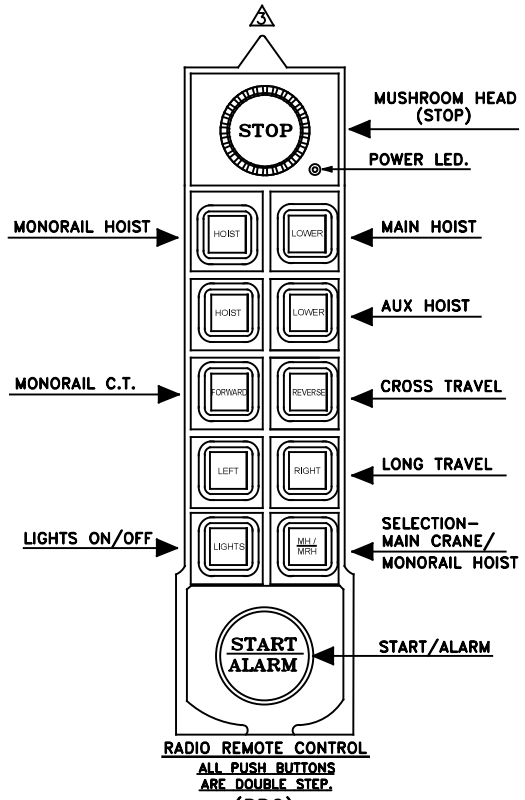




MONO RAIL HOIST BLOCK
PUSH BUTTON STATION
(MRHPBS)



JOG PUSH BUTTON +
HOIST BLOCK PUSH BUTTON BOARD
(IN OPERATER'S CABIN)



RADIO REMOTE CONTROL
ALL PUSH BUTTONS
ARE DOUBLE STEP.
(RRC)

Issue	Remarks	Name	Date
3	REVISED AS NOTED	DP	21.11.2019
1	REVISED AS NOTED	DP	07.09.2019

Prep. DINESH
Ckd. ABHAY
APPR. SMG
ALL DIMENSIONS ARE IN MM.

CLIENT
BHARAT HEAVY ELECTRICAL LTD
POWER SECTOR
PROJECT ENGINEERING MANAGEMENT
NEW DELHI
BHEL DRG NO. : PE-V0-437-501-A517

FAFECO

DESCRIPTION: 250-50-10T x 21M
POWER HOUSE CRANE
(CRANE-1&2)
TITLE : SCHEMATIC CIRCUIT DIAGRAM & BOM
OF MONORAIL HOIST PROTECTIVE PANEL

FURNACE & FOUNDRY EQUIPMENT CO.
CHANDIVALI FARM MUMBAI - 72
FAFECO DRG NO.: OG-06/250-50-10Tx21M/201

Sheet 49/65

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THIS IS PART OF TECHNICAL SPECIFICATION PE-TS-437-501-A001/A REV 0

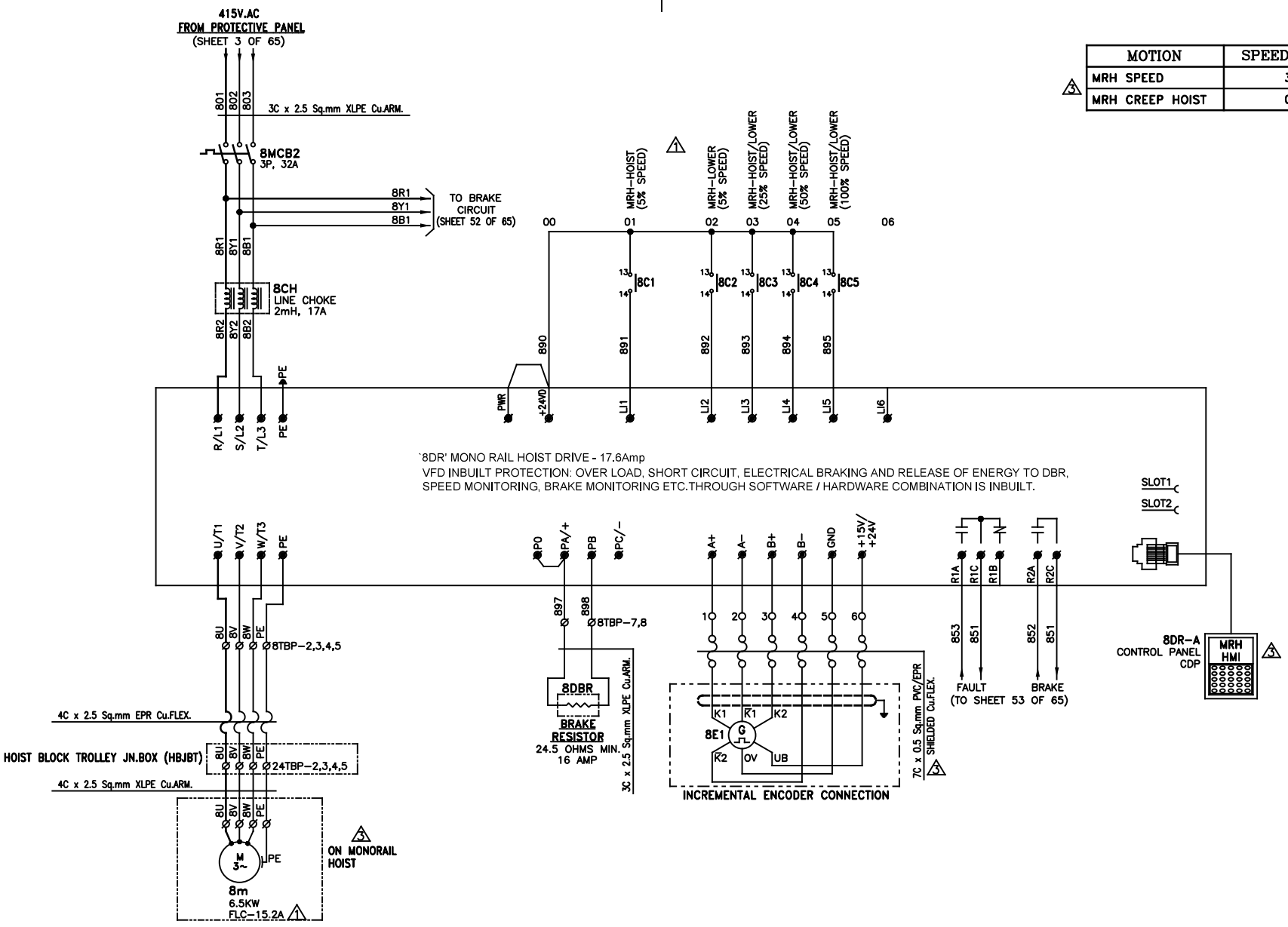
MONO RAIL HOIST PROTECTIVE PANEL

Device Tag	Quantity	Material Description	Technical Description	Make	Location
MC2	1	MAIN CONTACTOR-2	COIL:240V., 32A., ADD ON-3NO	SIEMENS	IN PANEL
7MCB1	1	MINIATURE CIRCUIT BREAKER	2POLE MCB, 6A	SIEMENS	IN PANEL
7PL1	1	PANEL LIGHT WITH SWITCH	240V., 2.5W, TYPE: LED	DSS	IN PANEL
7TS	1	THERMOSTAT FOR `7PH'	240V.AC, 0-80	VILECO/REPUTED	IN PANEL
7PH	1	PANEL HEATER	240V.AC, 20W.	VILECO/REPUTED	IN PANEL
7TG	1	TOGGLE SWITCH FOR 1TS	240V.AC, 10A.	KAYCEE	IN PANEL
7Pb0A	1	'EMOFF' PUSH BUTTON	10A, 1NC (MUSHROOMHEAD-RED)	SIEMENS	ON JOG PUSH BOTTON+HOIST BLOCK PUSH BUTTON
7I1A	1	MAIN CONTACTOR-2 'ON' INDICATING LAMP	110V AC LED LAMP, (RED)	SIEMENS	ON JOG PUSH BOTTON+HOIST BLOCK PUSH BUTTON BOARD
7Pb1A	1	'OFF' PUSH BUTTON	10A, 1NC (RED)	SIEMENS	ON JOG PUSH BOTTON+HOIST BLOCK PUSH BUTTON BOARD
7Pb2A	1	'ON' PUSH BUTTON	10A, 1NO (GREEN)	SIEMENS	ON JOG PUSH BOTTON+HOIST BLOCK PUSH BUTTON BOARD
7I1B	1	MAIN CONTACTOR-2 'ON' INDICATING LAMP	110V. AC LED LAMP, (RED)	SIEMENS	ON MONO RAIL HOIST BLOCK PUSH BUTTON STATION
7Pb0B	1	'EMOFF' PUSH BUTTON	10A, 1NC (MUSHROOMHEAD-RED)	SIEMENS	ON MONO RAIL HOIST BLOCK PUSH BUTTON STATION
7Pb1B	1	'OFF' PUSH BUTTON	10A, 1NC (RED)	SIEMENS	ON MONO RAIL HOIST BLOCK PUSH BUTTON
7Pb2B	1	'ON' PUSH BUTTON	10A, 1NO (GREEN)	SIEMENS	ON MONO RAIL HOIST BLOCK PUSH BUTTON
7Pb3B	1	'BELL' PUSH BUTTON	10A, 1NO (YELLOW)	SIEMENS	ON MONO RAIL HOIST BLOCK PUSH BUTTON STATION
S1C	1	ON/OFF SWITCH FOR 'UBL1-4'	10A, 2 POSITION, 1NO+1NC	SIEMENS	ON MONO RAIL HOIST BLOCK PUSH BUTTON STATION
K16	1	POTENTIAL FREE CONTACTS OF PENDANT RADIO REMOTE CONTROL PANEL FOR PP	POTENTIAL FREE RELAY, 110V.AC	SNT/REPUTED	IN REMOTE PANEL
8LS1	1	LIMIT SWITCH (MONO RAIL HOIST)	TYPE: GRAVITY, 10A., 1NC	EMM/SOC	ON MONO RAIL HOIST

				Prep.	DINESH	CLIENT	BHARAT HEAVY ELECTRICAL LTD POWER SECTOR PROJECT ENGINEERING MANAGEMENT NEW DELHI	FAFECO	DESCRIPTION: 250-50-10T x 21M POWER HOUSE CRANE (CRANE-1&2)	FURNACE & FOUNDRY EQUIPMENT CO. CHANDIVALI FARM MUMBAI - 72	Sheet 50/65
				Ckd.	ABHAY					
1	REVISED AS NOTED	DP	07.09.2019	APPR.	SMG			TITLE : SCHEMATIC CIRCUIT DIAGRAM & BOM OF MONORAIL HOIST PROTECTIVE PANEL	FAFECO DRG NO.: OG-06/250-50-10Tx21M/201	
Issue	Remarks	Name	Date	ALL DIMENSIONS ARE IN MM.		BHEL DRG NO. : PE-V0-437-501-A517				

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Issue	Remarks	Name	Date
3	REVISED AS NOTED	DP	19.11.2019
2	REVISED AS NOTED	DP	30.09.2019
1	REVISED AS NOTED	DP	07.09.2019

Prep. DINESH
Ckd. ABHAY
APPR. SMG
ALL DIMENSIONS ARE IN MM.

CLIENT

BHARAT HEAVY ELECTRICAL LTD
POWER SECTOR
PROJECT ENGINEERING MANAGEMENT
NEW DELHI

BHEL DRG NO. : PE-V0-437-501-A517

FAFECO

DESCRIPTION: 250-50-10T x 21M POWER HOUSE CRANE (CRANE-1&2)

TITLE : SCHEMATIC CIRCUIT DIAGRAM & BOM OF MONORAIL HOIST PANEL

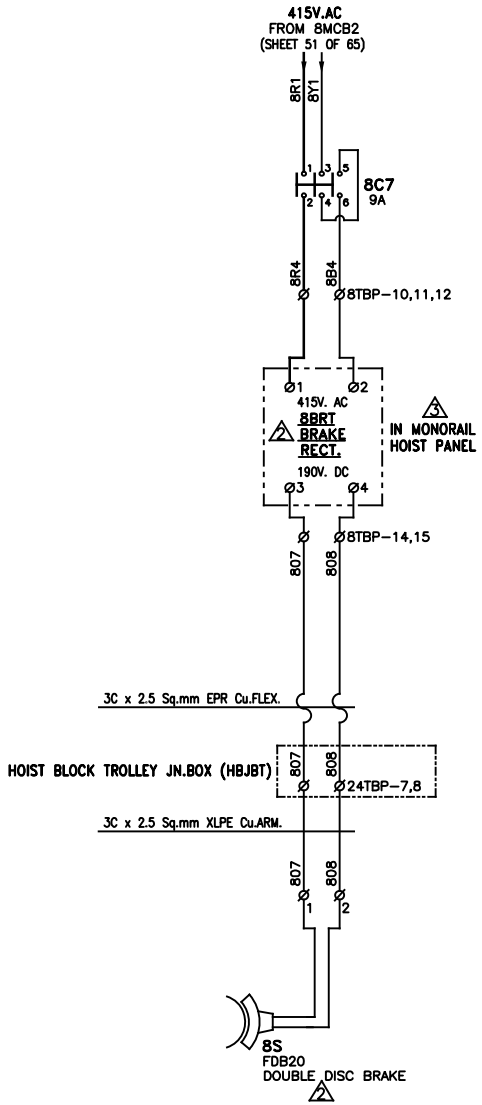
FURNACE & FOUNDRY EQUIPMENT CO.
CHANDIVALI FARM MUMBAI - 72

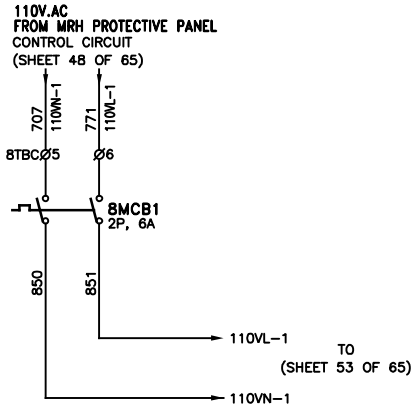
FAFECO DRG NO.: OG-06/250-50-10Tx21M/201

Sheet 51/65

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Issue	Remarks	Name	Date
3	REVISED AS NOTED	DP	19.11.2019
2	REVISED AS NOTED	DP	30.09.2019

Prep. DINESH
Ckd. ABHAY
APPR. SMG
ALL DIMENSIONS ARE IN MM.

CLIENT
BHARAT HEAVY ELECTRICAL LTD
POWER SECTOR
PROJECT ENGINEERING MANAGEMENT
NEW DELHI
BHEL DRG NO. : PE–V0–437–501–A517

FAFECO

DESCRIPTION: 250–50–10T x 21M
POWER HOUSE CRANE
(CRANE–1&2)

TITLE : SCHEMATIC CIRCUIT DIAGRAM & BOM OF MONORAIL HOIST PANEL

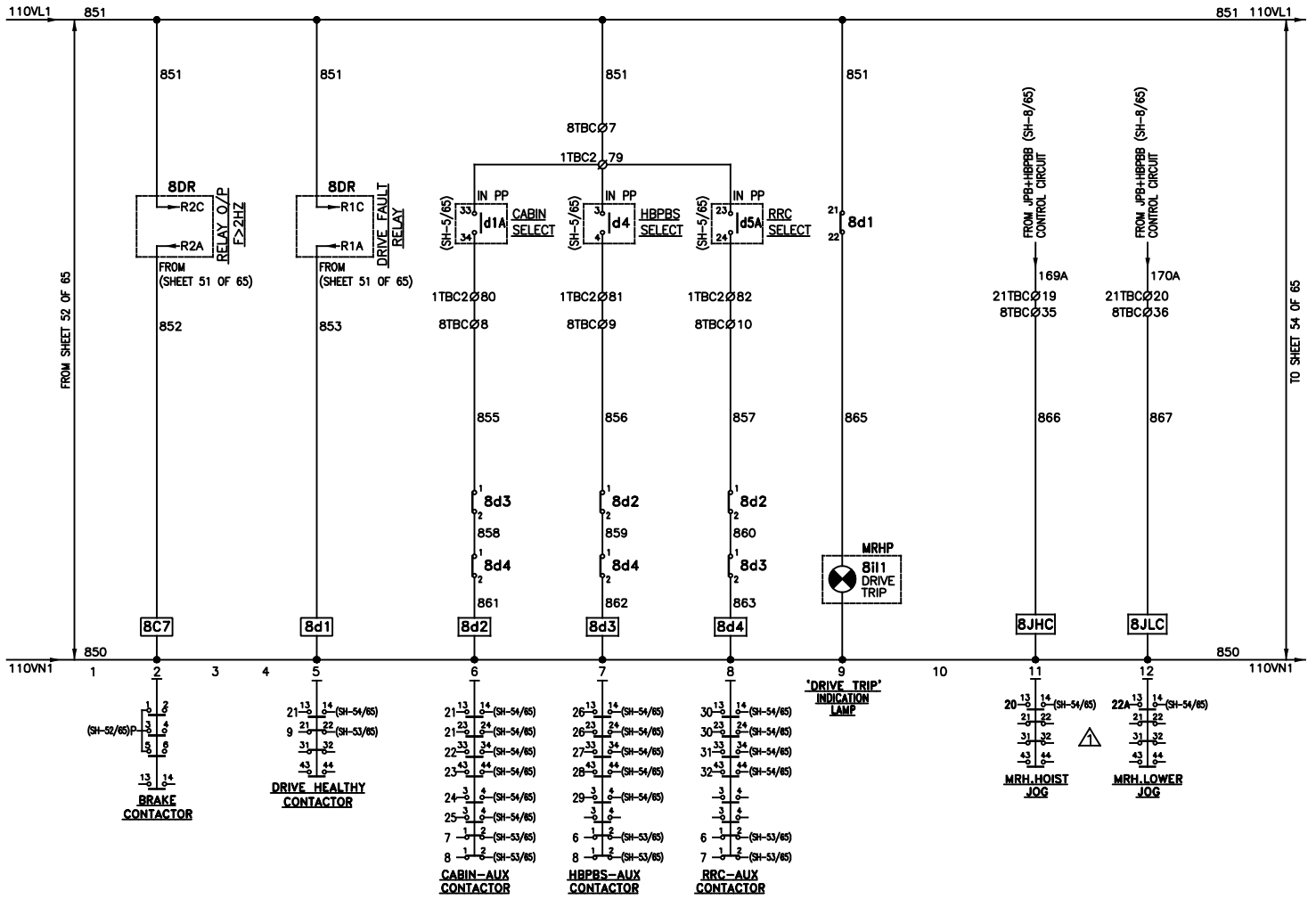
FURNACE & FOUNDRY EQUIPMENT CO.
CHANDIVALI FARM MUMBAI – 72

FAFECO DRG NO.: OG–06/250–50–10Tx21M/201

Sheet 52 / 65

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				Prep.	DINESH
				Ckd.	ABHAY
1	REVISED AS NOTED	DP	07.09.2019	APPR.	SMG
Issue	Remarks	Name	Date	ALL DIMENSIONS ARE IN MM.	

CLIENT

BHARAT HEAVY ELECTRICAL LTD
POWER SECTOR
PROJECT ENGINEERING MANAGEMENT
NEW DELHI

BHEL DRG NO. : PE-V0-437-501-A517

FAFECO

DESCRIPTION: 250-50-10T x 21M POWER HOUSE CRANE (CRANE-1&2)

TITLE : SCHEMATIC CIRCUIT DIAGRAM & BOM OF MONORAIL HOIST PANEL

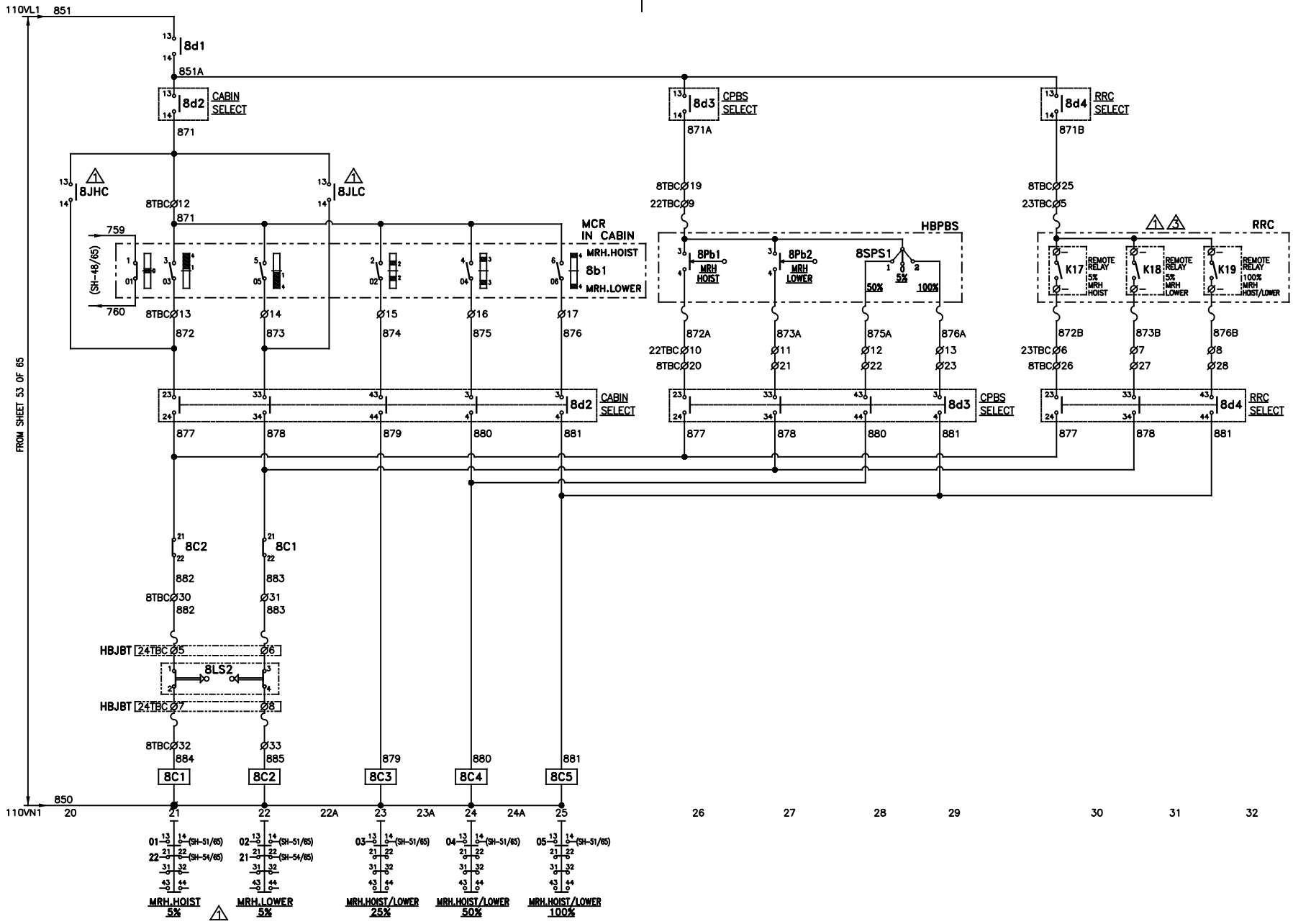
FURNACE & FOUNDRY EQUIPMENT CO.
CHANDIVALI FARM MUMBAI - 72

FAFECO DRG NO.: OG-06/250-50-10Tx21M/201

Sheet 53 / 65

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Issue	Remarks	Name	Date
3	REVISED AS NOTED	DP	19.11.2019
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BHARAT HEAVY ELECTRICAL LTD
POWER SECTOR
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NEW DELHI
BHEL DRG NO. : PE-V0-437-501-A517

FAFECO

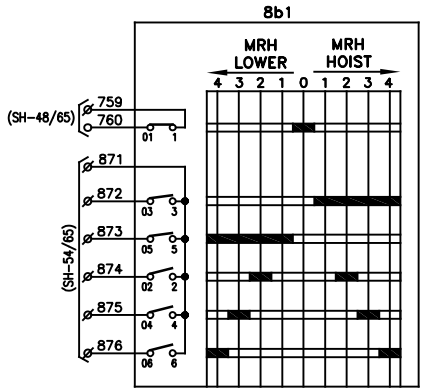
DESCRIPTION: 250-50-10T x 21M POWER HOUSE CRANE (CRANE-1&2)
TITLE : SCHEMATIC CIRCUIT DIAGRAM & BOM OF MONORAIL HOIST PANEL

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CHANDIVALI FARM MUMBAI - 72
FAFECO DRG NO.: OG-06/250-50-10Tx21M/201

Sheet 54/65

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CONTROLLER SEQUENCE

MASTER CONTROLLER	CONTACTORS	8C1	8C2	8C3	8C4	8C5	8C7
MRH HOIST	4	○				○	○
	3	○			○		○
	2	○		○			○
	1	○					○
OFF	0						
MRH LOWER	1		○				○
	2		○	○			○
	3		○		○		○
	4		○			○	○

CONTACTORS SEQUENCE

○ CONTACTORS ENERGISED.

NOTE: FOR PUSH BUTTON OPERATION

PUSH BUTTON	SPEED	CONTACTORS 8C7	8C1	8C2	8C3	8C4	8C5
8Pb1	100%	○	○				○
	50%	○	○			○	
	5%	○	○				
⚠3 OFF							
8Pb2	5%	○		○			
	50%	○		○		○	
	100%	○		○			○

CONTACTORS SEQUENCE

○ CONTACTORS ENERGISED

⚠3

NOTE: FOR REMOTE OPERATION

RELAY K17:– FOR MRH HOIST–5%
RELAY K18:– FOR MRH DOWN–5%
RELAY K19:– FOR MRH HOIST/LOWER–100%

Issue	Remarks	Name	Date
3	REVISED AS NOTED	DP	19.11.2019

Prep. DINESH
Ckd. ABHAY
APPR. SMG
ALL DIMENSIONS ARE IN MM.

CLIENT: BHARAT HEAVY ELECTRICAL LTD
POWER SECTOR
PROJECT ENGINEERING MANAGEMENT
NEW DELHI
BHEL DRG NO. : PE–V0–437–501–A517

FAFECO

DESCRIPTION: 250–50–10T x 21M POWER HOUSE CRANE (CRANE–1&2)
TITLE : SCHEMATIC CIRCUIT DIAGRAM & BOM OF MONORAIL HOIST PANEL

FURNACE & FOUNDRY EQUIPMENT CO.
CHANDIVALI FARM MUMBAI – 72
FAFECO DRG NO.: OG–06/250–50–10Tx21M/201

Sheet 55/65

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MONO RAIL HOIST

Device Tag	Quantity	Material Description	Technical Description	Make	Location
8m	1	MONO RAIL HOIST MOTOR	6.5 MOTOR KW, 6 POLE, 40% CDF, CL-F (MECH KW: 5.7) (MECH FLC : 11.4A.) FRAME: 132M (MOTOR FLC : 15.2A.) TYPE: SQ.CAGE	CGL/MARATHON/SIEMENS	ON MONO RAIL HOIST
2 8S+8BRT	1	MONO RAIL HOIST BRAKE	TYPE: FDB20, DISC BRAKE WITH RECTIFIER	EIMM/SOC/PATHE/KAKKU	ON MONO RAIL HOIST
8LS2	1	MONO RAIL HOIST LIMIT SWITCH	TYPE: ROTARY, 10A, 2NC	EIMM/SOC	ON MONO RAIL HOIST
3 8E1	1	MONO RAIL HOIST ENCODER (INCREMENTAL TYPE)	TYPE: EIL580-TT10.5BN.01024.A	HUBNER/REPUTED	ON MONO RAIL HOIST
8DBR	1	MONO RAIL HOIST DYNAMIC BREAKING RESISTOR	24.5 OHMS MIN., 16AMP	EIMM/YESDEE	IN PANEL
8DR	1	MONO RAIL HOIST DRIVE	415V.AC, 7.5 KW, 17.6A. TYPE: ATV71HU75N4	SCHNEIDER/ABB/SIEMENS	IN PANEL
8CH	1	MONO RAIL HOIST LINE CHOKE	2mH, 17A	NEC	IN PANEL
8MCB2	1	MINIATURE CIRCUIT BREAKER	3POLE, 32A	SIEMENS	IN PANEL
8MCB1	1	MINIATURE CIRCUIT BREAKER	2POLE, 6A	SIEMENS	IN PANEL
8C7	1	BRAKE CONTACTOR	COIL:110V., 9A., 3P+1NO	SIEMENS	IN PANEL
8C1-5	5	AUX CONTACTORS	COIL:110V., 10A., 2NO+2NC	SIEMENS	IN PANEL
8d1	1	AUX CONTACTOR	COIL:110V., 10A., 2NO+2NC	SIEMENS	IN PANEL
8d2-8d4	3	AUX CONTACTORS	COIL:110V., 10A., 4NO, ADD ON-2NO,2NC	SIEMENS	IN PANEL
8JHC-8JLC	2	AUX CONTACTORS	COIL:110V., 10A., 2NO+2NC	SIEMENS	IN PANEL
8l1	1	MONO RAIL HOIST DRIVE TRIP	LED INDICATING LAMP (AMBER), 110V.AC	SIEMENS	ON PANEL DOOR

THIS IS PART OF TECHNICAL SPECIFICATION PE-TS-437-501-A001/A REV 0

Issue	Remarks	Name	Date
3	REVISED AS NOTED	DP	19.11.2019
2	REVISED AS NOTED	DP	30.09.2019
1	REVISED AS NOTED	DP	07.09.2019

Prep. DINESH | Ckd. ABHAY | APPR. SMG | ALL DIMENSIONS ARE IN MM.

CLIENT: BHARAT HEAVY ELECTRICAL LTD
POWER SECTOR
PROJECT ENGINEERING MANAGEMENT
NEW DELHI
BHEL DRG NO. : PE-V0-437-501-A517

FAFECO

DESCRIPTION: 250-50-10T x 21M POWER HOUSE CRANE (CRANE-1&2)
TITLE : SCHEMATIC CIRCUIT DIAGRAM & BOM OF MONORAIL HOIST PANEL

FURNACE & FOUNDRY EQUIPMENT CO.
CHANDIVALI FARM MUMBAI - 72
FAFECO DRG NO.: OG-06/250-50-10Tx21M/201

Sheet 56/65

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MONO RAIL HOIST					
Device Tag	Quantity	Material Description	Technical Description	Make	Location
8b1	1	`MONO RAIL HOIST' SPRING RETURN TYPE MASTER CONTROLLER	STEP: 4, CAMS: 6, Amp:10A	EIMV/KAKKU/SOC	IN CABIN
8Pb1	1	`MRH-HOIST' PUSH BUTTON	10A, 2NO (BLACK)	SIEMENS	ON CRANE PUSH BOTTON STATION
8Pb2	1	`MRH-LOWER' PUSH BUTTON	10A, 2NO (WHITE)	SIEMENS	ON CRANE PUSH BOTTON STATION
8SPS1	1	SELECTOR SWITCH FOR SPEED SELECTION - MRH - 5%, 50%, 100%	10A, 3 POSITION, 2NO+2NC	SIEMENS/KAYCEE	ON CRANE PUSH BOTTON STATION
K17, K18, K19	3	POTENTIAL FREE CONTACTS OF PENDANT RADIO REMOTE CONTROL PANEL FOR MHP	POTENTIAL FREE RELAY, 110V.AC	SNT/REPUTED	IN REMOTE PANEL

THIS IS PART OF TECHNICAL SPECIFICATION PE-TS-437-501-A001/A REV 0

Issue	Remarks	Name	Date

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POWER SECTOR
PROJECT ENGINEERING MANAGEMENT
NEW DELHI
BHEL DRG NO. : PE-V0-437-501-A517

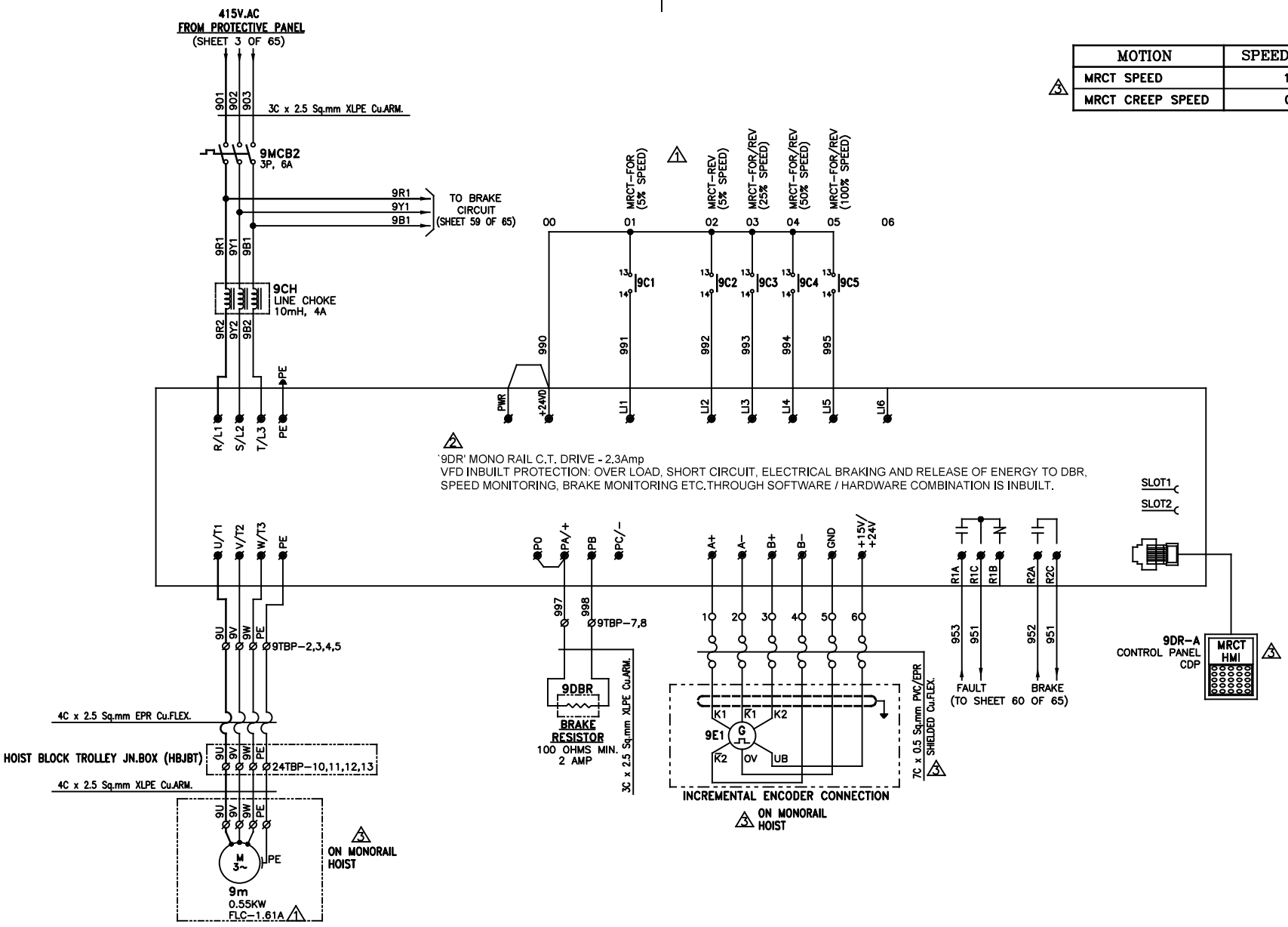
FAFECO

DESCRIPTION: 250-50-10T x 21M POWER HOUSE CRANE (CRANE-1&2)
TITLE : SCHEMATIC CIRCUIT DIAGRAM & BOM OF MONORAIL HOIST PANEL

FURNACE & FOUNDRY EQUIPMENT CO.
CHANDIVALI FARM MUMBAI - 72
FAFECO DRG NO.: OG-06/250-50-10Tx21M/201

Sheet 57 / 65

A3.dwg



MOTION	SPEED M/MIN
MRCT SPEED	10.0
MRCT CREEP SPEED	0.5

Issue	Remarks	Name	Date	
3	REVISED AS NOTED	DP	19.11.2019	Prep. DINESH
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1	REVISED AS NOTED	DP	07.09.2019	APPR. SMG

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POWER SECTOR
PROJECT ENGINEERING MANAGEMENT
NEW DELHI

BHEL DRG NO. : PE-V0-437-501-A517

FAFECO

DESCRIPTION: 250-50-10T x 21M POWER HOUSE CRANE (CRANE-1&2)

TITLE : SCHEMATIC CIRCUIT DIAGRAM & BOM OF MONORAIL HOIST CROSS TRAVEL PANEL

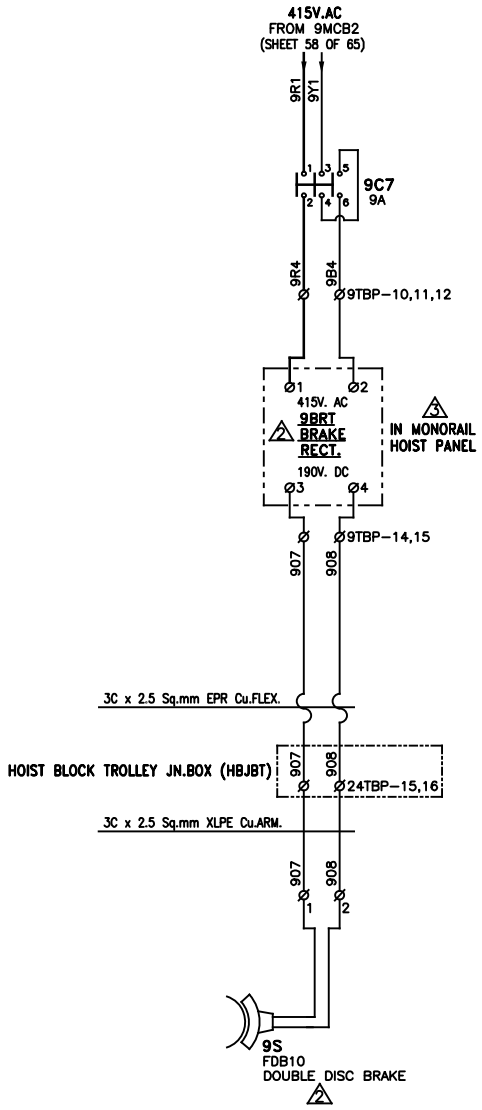
FURNACE & FOUNDRY EQUIPMENT CO.
CHANDIVALI FARM MUMBAI - 72

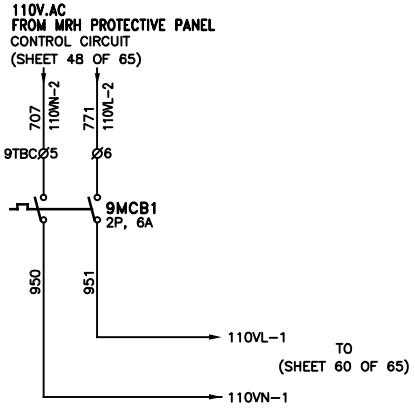
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Sheet 58/65

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Issue	Remarks	Name	Date
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Prep. DINESH
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APPR. SMG
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CLIENT
BHARAT HEAVY ELECTRICAL LTD
POWER SECTOR
PROJECT ENGINEERING MANAGEMENT
NEW DELHI
BHEL DRG NO. : PE-V0-437-501-A517

FAFECO

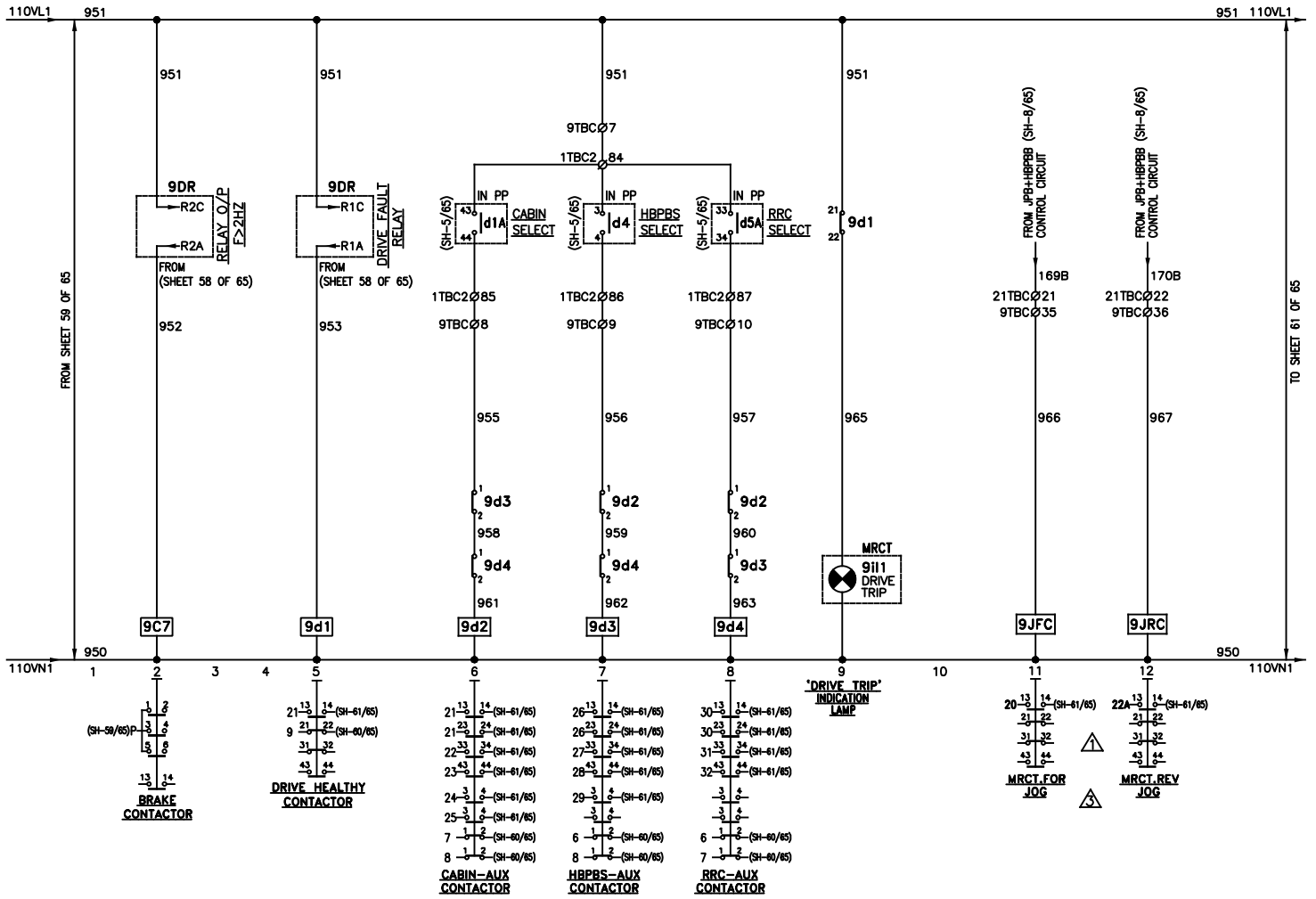
DESCRIPTION: 250-50-10T x 21M POWER HOUSE CRANE (CRANE-1&2)
TITLE : SCHEMATIC CIRCUIT DIAGRAM & BOM OF MONORAIL HOIST CROSS TRAVEL PANEL

FURNACE & FOUNDRY EQUIPMENT CO.
CHANDIVALI FARM MUMBAI - 72
FAFECO DRG NO.: OG-06/250-50-10Tx21M/201

Sheet 59/65

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Issue	Remarks	Name	Date
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POWER SECTOR
PROJECT ENGINEERING MANAGEMENT
NEW DELHI
BHEL DRG NO. : PE-V0-437-501-A517

FAFECO

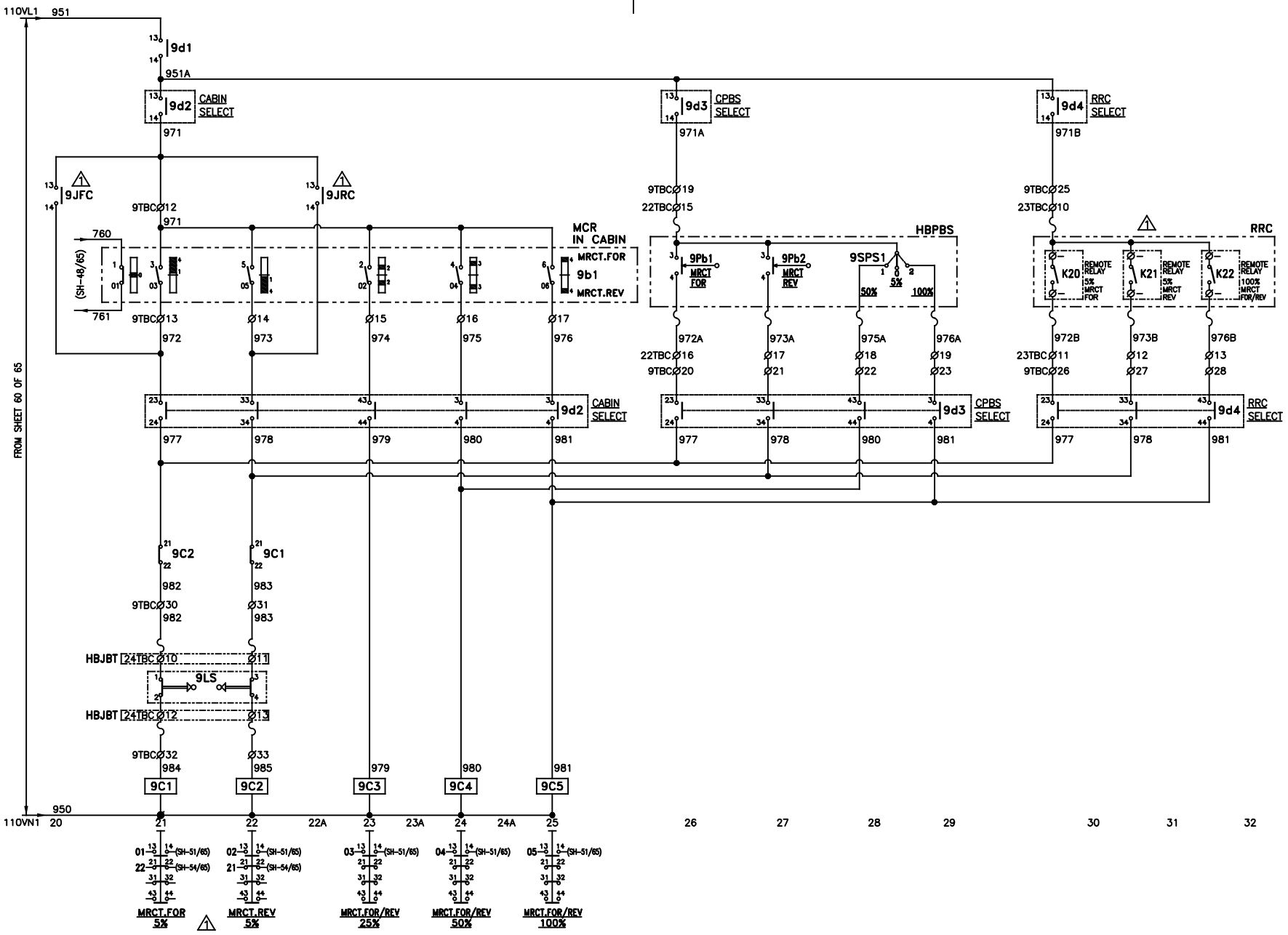
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TITLE : SCHEMATIC CIRCUIT DIAGRAM & BOM OF MONORAIL HOIST CROSS TRAVEL PANEL

FURNACE & FOUNDRY EQUIPMENT CO.
CHANDIVALI FARM MUMBAI - 72
FAFECO DRG NO.: OG-06/250-50-10Tx21M/201

Sheet 60/65

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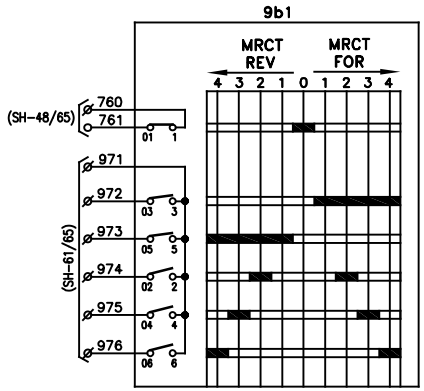
DESCRIPTION: 250-50-10T x 21M POWER HOUSE CRANE (CRANE-1&2)
TITLE : SCHEMATIC CIRCUIT DIAGRAM & BOM OF MONORAIL HOIST CROSS TRAVEL PANEL

FURNACE & FOUNDRY EQUIPMENT CO.
CHANDIVALI FARM MUMBAI - 72
FAFECO DRG NO.: OG-06/250-50-10Tx21M/201

Sheet 61/65

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CONTROLLER SEQUENCE

MASTER CONTROLLER	CONTACTORS		9C1	9C2	9C3	9C4	9C5	9C7
	MRCT FOR	4	○				○	○
		3	○			○		○
		2	○		○			○
		1	○					○
	OFF	0						
	MRCT REV	1		○				○
		2		○	○			○
		3		○		○		○
		4		○			○	○

CONTACTORS SEQUENCE

○ CONTACTORS ENERGISED.

NOTE: FOR PUSH BUTTON OPERATION

PUSH BUTTON	SPEED	CONTACTORS 9C7	9C1	9C2	9C3	9C4	9C5
9Pb1	100%	○	○				○
	50%	○	○			○	
	5%	○	○				
⚠3 OFF							
9Pb2	5%	○		○			
	50%	○		○		○	
	100%	○		○			○

CONTACTORS SEQUENCE

○ CONTACTORS ENERGISED

⚠3
NOTE: FOR REMOTE OPERATION

RELAY K20:- FOR MRCT FOR-5%
RELAY K21:- FOR MRCT REV-5%
RELAY K22:- FOR MRCT FOR/REV-100%

Issue	Remarks	Name	Date
3	REVISED AS NOTED	DP	19.11.2019

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POWER SECTOR
PROJECT ENGINEERING MANAGEMENT
NEW DELHI
BHEL DRG NO. : PE-V0-437-501-A517

FAFECO

DESCRIPTION: 250-50-10T x 21M POWER HOUSE CRANE (CRANE-1&2)
TITLE : SCHEMATIC CIRCUIT DIAGRAM & BOM OF MONORAIL HOIST CROSS TRAVEL PANEL

FURNACE & FOUNDRY EQUIPMENT CO.
CHANDIVALI FARM MUMBAI - 72
FAFECO DRG NO.: OG-06/250-50-10Tx21M/201

Sheet 62/65

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THIS IS PART OF TECHNICAL SPECIFICATION PE-TS-437-501-A001/A REV 0

MONO RAIL HOIST CROSS TRAVEL

Device Tag	Quantity	Material Description	Technical Description	Make	Location
9m	1	MONO RAIL CROSS TRAVEL MOTOR	0.55 MOTOR KW, 6 POLE, 40% CDF, CL-F FRAME: 80 (MOTOR FLC : 1.61A.) TYPE: SQ.CAGE	CGL/MARATHON/SIEMENS	ON MONO RAIL HOIST
9S+9BRT	1	MONO RAIL CROSS TRAVEL BRAKE	TYPE: FDB10, DISC BRAKE WITH RECTIFIER	EIMM/SOC/PATHE/KAKKU	ON MONO RAIL HOIST
9LS	1	MONO RAIL CROSS TRAVEL LIMIT SWITCH	TYPE: 2 WAY ROLLER LEVER, 10A, 2NC	EIMM/SOC	ON MONO RAIL HOIST
9E 1	1	MONO RAIL CROSS TRAVEL ENCODER (INCREMENTAL TYPE)	TYPE: EIL580-TT10.5BN.01024.A	HUBNER/REPUTED	ON MONO RAIL HOIST
9DBR	1	MONO RAIL CROSS TRAVEL DYNAMIC BREAKING RESISTOR	100 OHMS MIN., 2AMP	EIMM/YESDEE	IN PANEL
9DR	1	MONO RAIL CROSS TRAVEL DRIVE	415V.AC, 0.75 KW, 2.3A. TYPE: ATV71H075N4	SCHNEIDER/ABB/SIEMENS	IN PANEL
9CH	1	MONO RAIL CROSS TRAVEL LINE CHOKE	10mH, 4A	NEC	IN PANEL
9MCB2	1	MINIATURE CIRCUIT BREAKER	3POLE, 6A	SIEMENS	IN PANEL
9MCB1	1	MINIATURE CIRCUIT BREAKER	2POLE, 6A	SIEMENS	IN PANEL
9C7	1	BRAKE CONTACTOR	COIL:110V., 9A., 3P+1NO	SIEMENS	IN PANEL
9C1-5	5	AUX CONTACTORS	COIL:110V., 10A., 2NO+2NC	SIEMENS	IN PANEL
9d1	1	AUX CONTACTOR	COIL:110V., 10A., 2NO+2NC	SIEMENS	IN PANEL
9d2-9d4	3	AUX CONTACTORS	COIL:110V., 10A., 4NO, ADD ON-2NO,2NC	SIEMENS	IN PANEL
9IFC-9IRC	2	AUX CONTACTORS	COIL:110V., 10A., 2NO+2NC	SIEMENS	IN PANEL
9I1	1	MONO RAIL CROSS TRAVEL DRIVE TRIP	LED INDICATING LAMP (AMBER), 110V.AC	SIEMENS	ON PANEL DOOR

Issue	Remarks	Name	Date
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Prep. DINESH | Ckd. ABHAY | APPR. SMG | ALL DIMENSIONS ARE IN MM.

CLIENT: BHARAT HEAVY ELECTRICAL LTD, POWER SECTOR, PROJECT ENGINEERING MANAGEMENT, NEW DELHI

BHEL DRG NO. : PE-V0-437-501-A517

FAFECO

DESCRIPTION: 250-50-10T x 21M POWER HOUSE CRANE (CRANE-1&2)

TITLE : SCHEMATIC CIRCUIT DIAGRAM & BOM OF MONORAIL HOIST CROSS TRAVEL PANEL

FURNACE & FOUNDRY EQUIPMENT CO.
CHANDIVALI FARM MUMBAI - 72

FAFECO DRG NO.: OG-06/250-50-10Tx21M/201

Sheet 63/65

THIS IS PART OF TECHNICAL SPECIFICATION PE-TS-437-501-A001/REV.0

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MONO RAIL HOIST CROSS TRAVEL

Device Tag	Quantity	Material Description	Technical Description	Make	Location
9b1	1	`MONO RAIL CROSS TRAVEL' SPRING RETURN TYPE MASTER CONTROLLER	STEP: 4, CAMS: 6, Amp:10A	EIMV/KAKKU/SOC	IN CABIN
9Pb1	1	`MRCT-FOR' PUSH BUTTON	10A, 2NO (BLACK)	SIEMENS	ON CRANE PUSH BOTTON STATION
9Pb2	1	`MRCT-REV' PUSH BUTTON	10A, 2NO (WHITE)	SIEMENS	ON CRANE PUSH BOTTON STATION
9SPS1	1	SELECTOR SWITCH FOR SPEED SELECTION - MRCT - 5%, 50%, 100%	10A, 3 POSITION, 2NO+2NC	SIEMENS/KAYCEE	ON CRANE PUSH BOTTON STATION
K20,K21, K22	3	POTENTIAL FREE CONTACTS OF PENDANT RADIO REMOTE CONTROL PANEL FOR MHP	POTENTIAL FREE RELAY, 110V.AC	SNT/REPUTED	IN REMOTE PANEL

THIS IS PART OF TECHNICAL SPECIFICATION PE-TS-437-501-A001/A REV 0

Issue	Remarks	Name	Date

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POWER SECTOR
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NEW DELHI
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FAFECO

DESCRIPTION: 250-50-10T x 21M POWER HOUSE CRANE (CRANE-1&2)
TITLE : SCHEMATIC CIRCUIT DIAGRAM & BOM OF MONORAIL HOIST CROSS TRAVEL PANEL

FURNACE & FOUNDRY EQUIPMENT CO.
CHANDIVALI FARM MUMBAI - 72
FAFECO DRG NO.: OG-06/250-50-10Tx21M/201

Sheet 64/65

A3.dwg

NOTE:

1) Cable Block & Termination Diagram
   Please refer BHEL Drawing No: PE-V0-437-501-A518

Issue	Remarks	Name	Date

Prep. DINESH
Ckd. ABHAY
APPR. SMG
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CLIENT

BHARAT HEAVY ELECTRICAL LTD
POWER SECTOR
PROJECT ENGINEERING MANAGEMENT
NEW DELHI

BHEL DRG NO. : PE-V0-437-501-A517

FAFECO

DESCRIPTION: 250-50-10T x 21M POWER HOUSE CRANE (CRANE-1&2)

TITLE : SCHEMATIC CIRCUIT DIAGRAM & BOM OF MONORAIL HOIST CROSS TRAVEL PANEL

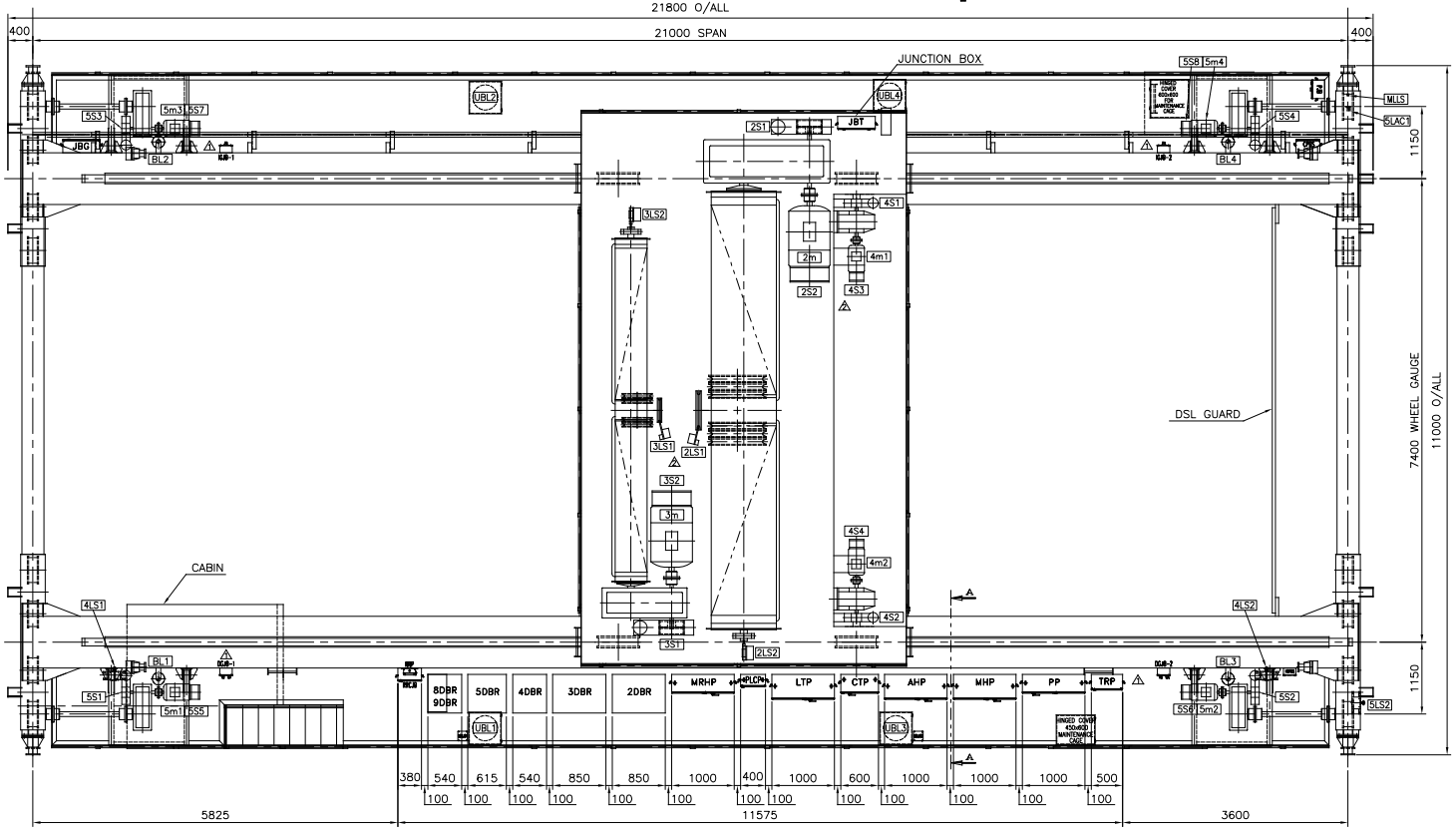
FURNACE & FOUNDRY EQUIPMENT CO.
CHANDIVALI FARM MUMBAI - 72

FAFECO DRG NO.: OG-06/250-50-10Tx21M/201

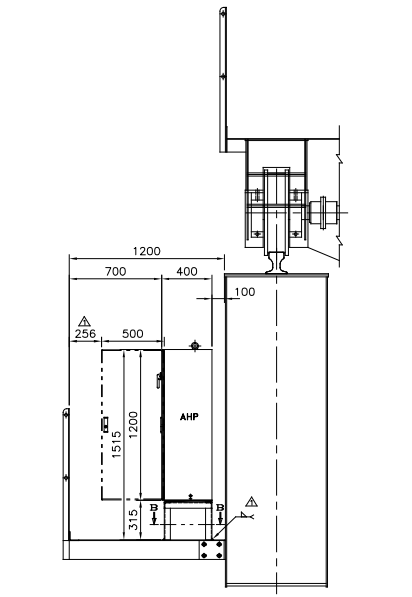
Sheet 65 / 65

A3.dwg

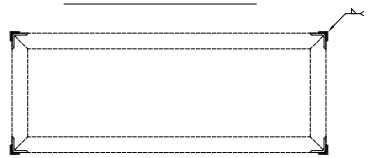
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PLAN

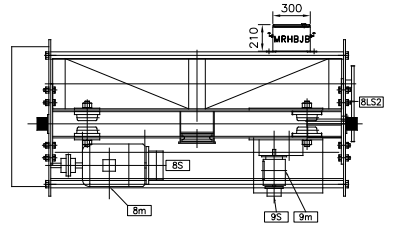


SECTION 'A'–'A'

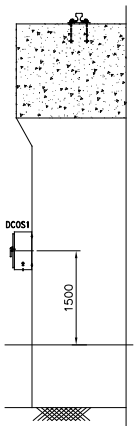


⚠ SECTION 'B'–'B'

NOTE:
1) ALL FILLET STITCH WELDS OF 6mm x 25mm LENGTH
⚠ 2) SICK BAY ISOLATING SWITCH–1&2 (SBS1, SBS2) SHALL BE KEPT IN PANEL LOCATED ON GANTRY PLATFORM.



10T MONO RAIL HOIST BLOCK



B

DSL SWITCH DETAILS

⚠

CJB–2	POWER SOCKET CABIN JN. BOX–2 (PS6)	200 x 120 x 200 HEIGHT
CJB–1	POWER & HAND LAMP SOCKET CABIN JN. BOX–1 (PS5/HL2)	200 x 120 x 200 HEIGHT
IGJB–2	POWER SOCKET IDLE GIRDER JN. BOX–2 (PS4)	200 x 120 x 200 HEIGHT
IGJB–1	POWER SOCKET IDLE GIRDER JN. BOX–1 (PS3)	200 x 120 x 200 HEIGHT
DGJB–2	POWER & HAND LAMP POWER SOCKET DRIVE GIRDER JN. BOX–2 (PS1/HLPS)	200 x 120 x 200 HEIGHT
DGJB–1	POWER & HAND LAMP SOCKET DRIVE GIRDER JN. BOX–1 (PS1/HL1)	200 x 120 x 200 HEIGHT
HBPBS	HOIST BLOCK PUSH BUTTON STATION JN.BOX	200 x 120 x 200 HEIGHT
PJB	PLUG JN.BOX ON CRANE–1	300 x 210 x 300 HEIGHT
MRHBJB	MONO RAIL HOIST BLOCK JN.BOX	300 x 210 x 400 HEIGHT
CPBSJB	CRANE PUSH BUTTON STATION JN.BOX	380 x 150 x 300 HEIGHT
LBDB	LIFTING BEAM D.BOARD (IN CABIN)	400 x 150 x 300 HEIGHT
JPB+HBPBB	JOG PUSH BUTTON + HOIST BLOCK PUSH BUTTON BOARD (IN CABIN)	250 x 150 x 250 HEIGHT
PB+LDB	PUSH BUTTON + LIGHTING D.BOARD (IN CABIN)	400 x 150 x 300 HEIGHT
RRJB	RADIO REMOTE PANEL JN.BOX	380 x 210 x 300 HEIGHT
RRP	RADIO REMOTE PANEL	200 x 100 x 250 HEIGHT
JBG	JN.BOX ON GIRDER	600 x 210 x 380 HEIGHT
JBT	JN.BOX ON TROLLEY	600 x 210 x 380 HEIGHT
TRP	CONTROL & LIGHTING TRANSFORMER PANEL	500 x 250 x 700 HEIGHT
9DBR	MONO RAIL C.T. DBR BOX	600 x 300 x 250 HEIGHT
8DBR	MONO RAIL HOIST DBR	540 x 620 x 340 HEIGHT
5DBR	L.T. DBR	615 x 620 x 645 HEIGHT
4DBR	C.T. DBR	540 x 620 x 340 HEIGHT
3DBR	AUX HOIST DBR	850 x 620 x 1220 HEIGHT
2DBR	MAIN HOIST DBR	850 x 620 x 1220 HEIGHT
MRHP	MONORAIL HOIST PANEL	1000 x 300 x 1200 HEIGHT
PLCP	PLC PANEL	400 x 210 x 600 HEIGHT
LTP	LONG TRAVEL PANEL	1000 x 400 x 1200 HEIGHT
CTP	CROSS TRAVEL PANEL	600 x 300 x 1200 HEIGHT
AHP	AUX. HOIST PANEL	1000 x 400 x 1200 HEIGHT
MHP	MAIN HOIST PANEL	1000 x 400 x 1200 HEIGHT
PP	PROTECTIVE PANEL	1000 x 300 x 1200 HEIGHT
ITEM	DESCRIPTION	

⚠

CPJB	CONTROL KEY REMOVABLE SWITCH (ON CABIN PLATFORM JN.BOX)	150 x 100 x 150 HEIGHT
UBLJB1–2	UNDER BRIDGE LIGHTS JN. BOX–1 & 2	150 x 100 x 150 HEIGHT
DCOS1	DSL CHANGE OVER SWITCH	500 x 300 x 600 HEIGHT
B	ELECTRICAL BELL (OUTSIDE CABIN)	
MLLS	MECH. LINK LIMIT SWITCHES FOR MECH.LINK LOCKED IN BOTH SIDES OF COLOUM ROW	
BL1–4	BRIDGE LIGHTS	240V, 20 WATTS., LED
UBL1–4	UNDER BRIDGE LIGHTS ⚠	240V, 1000 WATTS., HPSV
8LS2	MONO RAIL HOIST ROTARY LIMIT SWITCH	
9S	MONO RAIL C.T. DISC BRAKE	
9m	MONO RAIL C.T. MOTOR	
8S	MONO RAIL HOIST DISC BRAKE	
8m	MONO RAIL HOIST MOTOR	
5LS2	LONG TRAVEL LEVER TYPE 1 WAY LIMIT SWITCH	
5LAC1	LONG TRAVEL LEFT SIDE ANTI–COLLISION DEVICE	
5S5–8	LONG TRAVEL DISC BRAKE 5–8	
5S1–4	LONG TRAVEL E.H.THRUSTOR BRAKE 1–4	
5m1–4	LONG TRAVEL MOTORS 1, 2, 3, 4	
4LS1–2	CROSS TRAVEL LEVER TYPE 1 WAY LIMIT SWITCH	
4S3–4	CROSS TRAVEL DISC BRAKE–3&4	
4S1–2	CROSS TRAVEL E.H.THRUSTOR BRAKE–1&2	
4m1–2	CROSS TRAVEL MOTOR–1&2	
3LS2	AUX HOIST ROTARY LIMIT SWITCH	
3LS1	AUX HOIST GRAVITY LIMIT SWITCH	
3S2	AUX HOIST DISC BRAKE–2	
3S1	AUX HOIST E.H.THRUSTOR BRAKE–1	
3m	AUX HOIST MOTOR	
2LS2	MAIN HOIST ROTARY LIMIT SWITCH	
2LS1	MAIN HOIST GRAVITY LIMIT SWITCH	
2S2	MAIN HOIST DISC BRAKE–2	
2S1	MAIN HOIST E.H.THRUSTOR BRAKE–1	
2m	MAIN HOIST MOTOR	
ITEM	DESCRIPTION	

REV.	DATE	ALTD	CHD	APPD
0	03.08.19	DP	SM	SM
1	09.10.19	DP	SM	SM
2	26.11.19	DP	SM	SM

REV.	DATE	ALTD	CHD	APPD

JOB NO.	437
STATUS	CONTRACT
DISTRIBUTION	

CUSTOMER	SJVN ARUN-3 POWER DEVELOPMENT COMPANY Pvt. LTD. (SAPDC)
CONSULTANT	SJVN LTD.
PROJECT	ARUN-3 HYDRO ELECTRIC PROJECT (NEPAL) (4X225MW)

BHARAT HEAVY ELECTRICALS LTD
POWER SECTOR
PROJECT ENGINEERING MANAGEMENT
NEW DELHI

DEPT CODE		NAME	SIGN	DATE
	DRN	DP		05.07.19
	DESN	DP		05.07.19
	CHD	SM		05.07.19
	APPD	SM		05.07.19

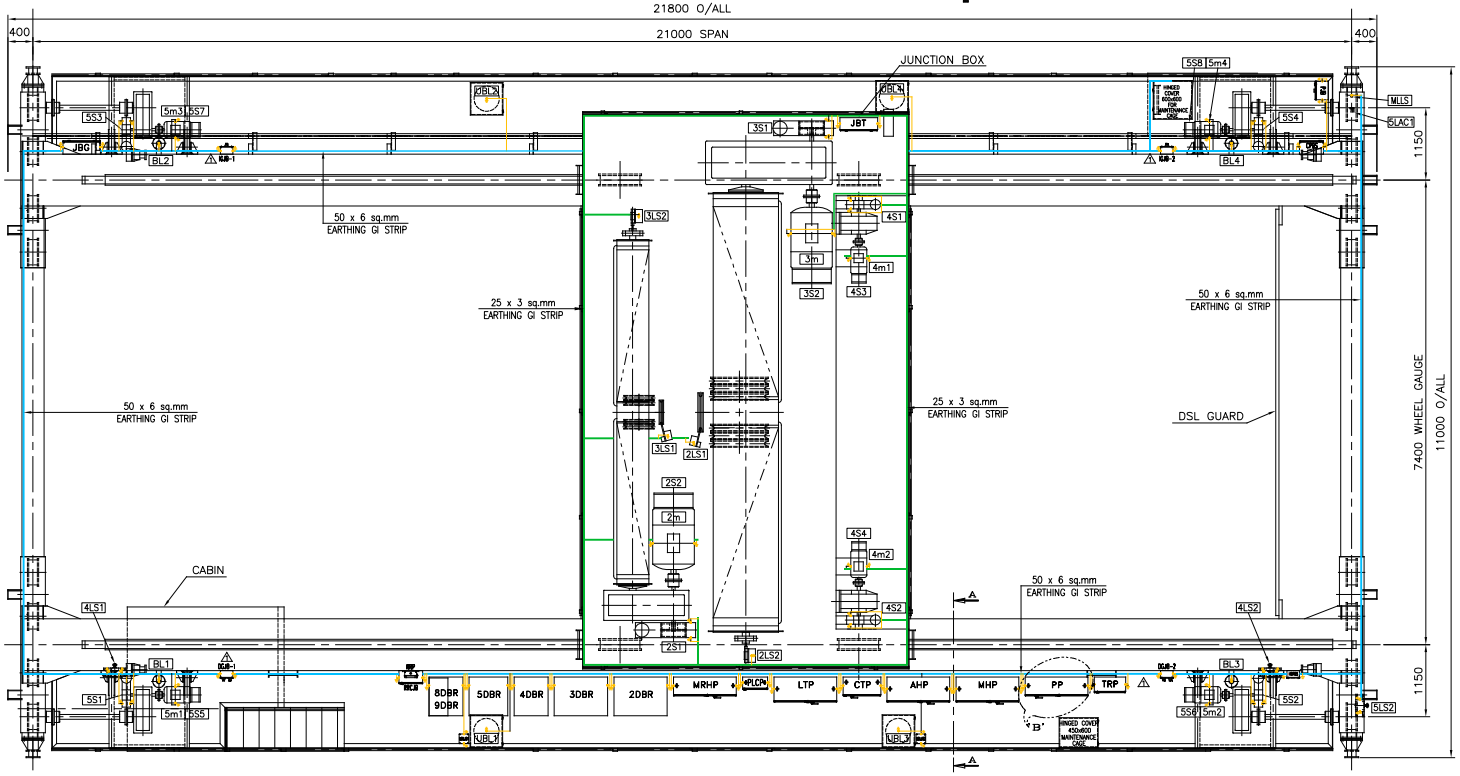
FURNACE & FOUNDRY EQUIPMENT CO.
CHANDIVALI FARM MUMBAI – 72

FAFECO Drawing no.
OG-06/250-50-10Tx21M/213

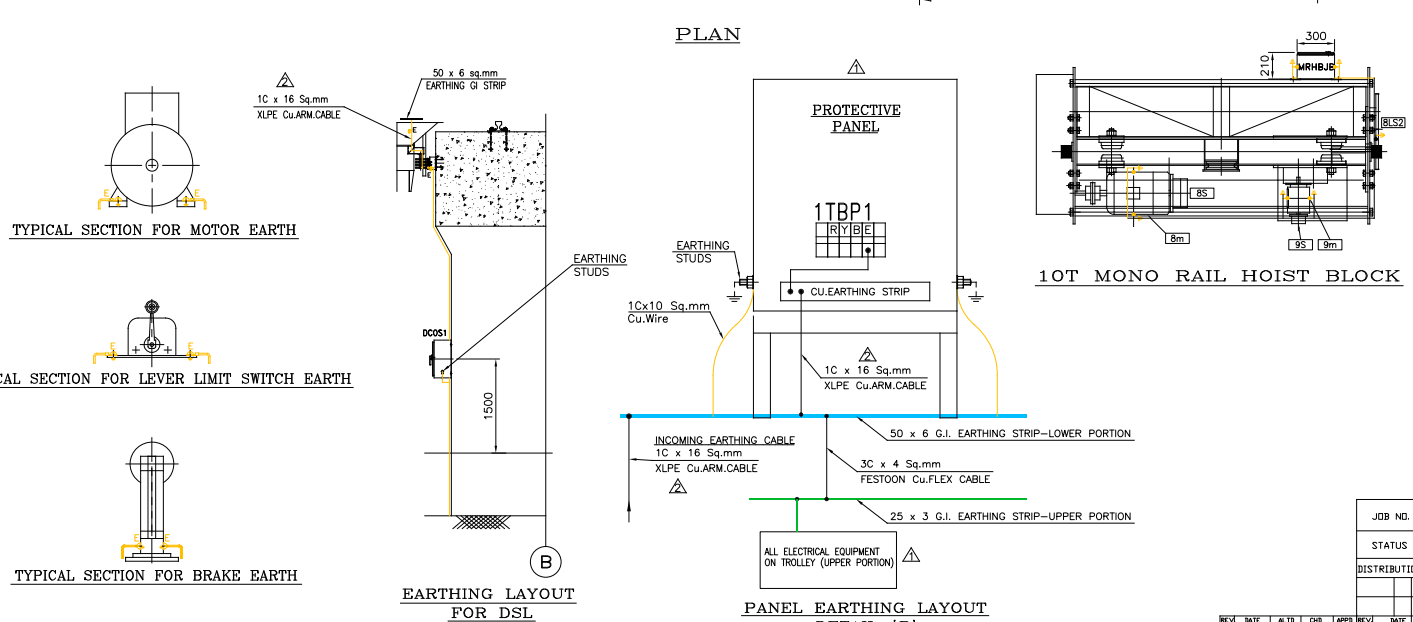
TITLE
Equipment layout
for
250/50/10T x 21M Power House Crane

DEPT.	SCALE – 1:1	DRAWING NO
SIGN		PE-V0-437-501-A517
DATE		SHEET 1 OF 1 REV. 2

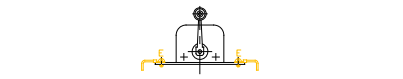
THIS IS PART OF TECHNICAL SPECIFICATION PE-TS-437-501-A00 REV 0



PLAN



SECTION 'A'–'A'



TYPICAL SECTION FOR MOTOR EARTH

TYPICAL SECTION FOR LEVER LIMIT SWITCH EARTH

TYPICAL SECTION FOR BRAKE EARTH

EARTHING LAYOUT FOR DSL

PANEL EARTHING LAYOUT DETAIL–'B'

10T MONO RAIL HOIST BLOCK

EARTHING TABLE

SR.NO.	COLOUR	G.I. EARTHING STRIP IN MM/CABLE SIZE IN SQ.MM	REMARK
1		50x6	RING MAIN IN LOWER POSITION OF CRANE
2		25x3	RING MAIN IN UPPER (TROLLEY) POSITION OF CRANE
3		1Cx16	MAIN EARTH FROM DSL TO CRANE
4		3Cx4	CONNECTS RING MAIN OF LOWER & UPPER

COPPER WIRE SIZES FOR EARTHING FROM G.I. FLAT

SR.NO.	EQUIPMENT	COPPER WIRE SIZE IN SQ.MM	REMARK
1	ALL CONTROL EQUIPMENT	1Cx2.5	ALL LIMIT SWITCHES, CONTROL EQUIPMENT IN CABIN
2	ALL BRAKES	1Cx2.5	MH, AH, CT, LT, HB-H, HB-CT BRAKES
3	ALL MOTORS OF 15 KW OR LESS & PANELS	1Cx2.5	CT, LT, HB-H, HB-CT MOTORS
4	MH MOTORS & MH PANEL, JBG, JBT	1Cx10	
5	AH MOTORS & AH PANEL	1Cx10	

CUSTOMER	SJVN ARUN-3 POWER DEVELOPMENT COMPANY Pvt. LTD. (SAPDC)
CONSULTANT	SJVN LTD.
PROJECT	ARUN-3 HYDRO ELECTRIC PROJECT (NEPAL) (4X225MW)

BHARAT HEAVY ELECTRICALS LTD
POWER SECTOR
PROJECT ENGINEERING MANAGEMENT
NEW DELHI

DEPT CODE		NAME	SIGN	DATE
	DRN	DP		05.07.19
	DESN	DP		05.07.19
	CHD	SM		05.07.19
	APPD	SM		05.07.19

FURNACE & FOUNDRY EQUIPMENT CO.
CHANDIVALI FARM MUMBAI – 72

FAFECO Drawing no. OG-06/250-50-10Tx21M/214

JOB NO.	437
STATUS	CONTRACT
DISTRIBUTION	

TITLE: Earthing layout for 250/50/10T x 21M Power House Crane

REV.	DATE	ALTD	CHD	APPD
0	03.08.19	DP	SM	SM
1	18.09.19	DP	SM	SM
2	02.12.19	DP	SM	SM

DEPT.	SCALE – 1:1	DRAWING NO.
SIGN		PE-V0-437-501-A517
DATE		SHEET – 1 OF 1 REV. 2

THIS IS PART OF TECHNICAL SPECIFICA... 1AA00 REV 0

Ga of Panel layout
for 250-50-10Tx21M Power House Crane.

(VENDOR : M/S. FAFECO)

AMBIENT TEMPERATURE - 40°C

SJVN Arun-3Power Development Company (P.) Ltd.
(A company promoted by SJVN Limited, joint venture of Govt. of India and Govt. of H.P)
Regd. No.: 111808/69/070

Accepted by Consultant	To be Issued to Contractor		
	Category: ACCEPTANCE (INFORMATION)		
	Pramod.	Bakshi	Shivanand
☑Yes ☐No	Reviewed	Recommended	Accepted

Consultant:- SJVN LTD.

Recommended for Acceptance (Information category)

SUB GROUP		SECTIONAL HEAD	HOD
Checked	Reviewed		

SHEET NO. 1 OF 17

CUSTOMER	SJVN ARUN-3 POWER DEVELOPMENT COMPANY Pvt. LTD. (SAPDC)
CONSULTANT	SJVN LTD.
PROJECT	ARUN-3 HYDRO ELECTRIC PROJECT (NEPAL) (4X225MW)

BHARAT HEAVY ELECTRICALS LTD
POWER SECTOR
PROJECT ENGINEERING MANAGEMENT
NEW DELHI

DEPT CODE		NAME	SIGN	DATE
	DRN	DP		05.07.19
	DESN	DP		05.07.19
	CHD	SM		05.07.19
	APPD	SM		05.07.19

FAFECO — FURNACE & FOUNDRY EQUIPMENT CO.
CHANDIVALI FARM MUMBAI – 72

FAFECO Drawing no.
OG-06/250-50-10Tx21M/211

JOB NO. 437

STATUS CONTRACT

DISTRIBUTION

TITLE
△1 General Arrangement of a) Protective panel b) Main hoist panel c) Aux. hoist panel d) Cross Travel panel. e) Long Travel panel. f) Pendent g) Remote Radio Control For 250/50/10T x 21M Power House Crane (CRANE-1&2)

REV.	DATE	ALTD	CHD	APPD
0	10.07.19	DP	SM	SM
1	18.09.19	DP	SM	SM
2	05.11.19	DP	SM	SM
3	29.11.19	DP	SM	SM

REV.	DATE	ALTD	CHD	APPD

DEPT.
SCALE - 1:1
SIGN
DATE

DRAWING NO
△1 PE-V0-437-501-A518

SHEET - 1 OF 17 REV. 3

THIS IS PART OF TECHNICAL SPECIFICATION PE-TS-437-501-A001A REV 0

A3.dwg

TABLE OF CONTENTS △1△2△3

SHEET NO.	PAGE DESCRIPTION	REV.
1	Cover Sheet for GA of Panel Layout of 250-50-10T x 21M	2
2	Table of Contents	2
3	GA OF Protective Panel	3
4	GA of Main Hoist Panel	2
5	GA of Aux Hoist Panel	2
6	GA of Cross Tarverse Panel	2
7	GA of Long Travel Panel	2
8	GA of PLC & Control, Lighting Transformer Box	2
9	GA of Mono Rail hoist Panel	2
10	GA of MH, AH, CT, LT DBR box	1
11	GA of Mono Rail hoist, CT DBR & Mono Rail hoist block jn.box, Plug jn.box	1
12	GA of Girder & Trolley jn. box	1
13	GA of PB+LDB, JPB+HBPBB, LBDB & Crane Push button station & Radio remote jn.box	1
14	GA of HBPBS, UBLJB1, UBLJB2, DGJB, IGJB, CJB, CPJB jn.box	2
15	GA of Radio Remote Control, Crane Push button station & Hoist block Push button station	2
16	GA of DSL Change over switch & Radio Remote Panel	2
17	GA of Sick Bay Isolating switch panel	2

△1

NOTES:-

1) ENGRAVED NAMEPLATE IS TO BE PROVIDED FOR ALL PANELS. ALL NAME PLATES WILL BE OF NON RUSTING METAL OR 3-PLY LAMICOID WITH WHITE ENGRAVED LETTERING ON BLACK BACK-GROUND, INSCRIPTIONS.
2) SUITABLE PLASTIC STICKER LABELS WILL BE PROVIDED FOR EASY IDENTIFICATION OF ALL EQUIPMENTS, LOCATED INSIDE THE PANEL/MODULE.
3) 20% SPARE TERMINALS ARE CONSIDER IN EACH PANEL/CUBICLE/BOX AND THESE SPARE TERMINALS ARE TO BE UNIFORMLY DISTRIBUTED ON ALL TERMINALS ROWS.
4) CABLE GLANDS AND LUGS IN M/s FAFECO'S SCOPE.

Issue	Remarks	Name	Date	ALL DIMENSIONS ARE IN MM.
2	REVISED AS NOTED	DP	30.09.2019	Ckd. ABHAY
1	REVISED AS NOTED	DP	07.09.2019	APPR. SMG

CLIENT: BHARAT HEAVY ELECTRICAL LTD
POWER SECTOR
PROJECT ENGINEERING MANAGEMENT
NEW DELHI
BHEL DRG NO. : PE-V0-437-501-A518 △1

FAFECO

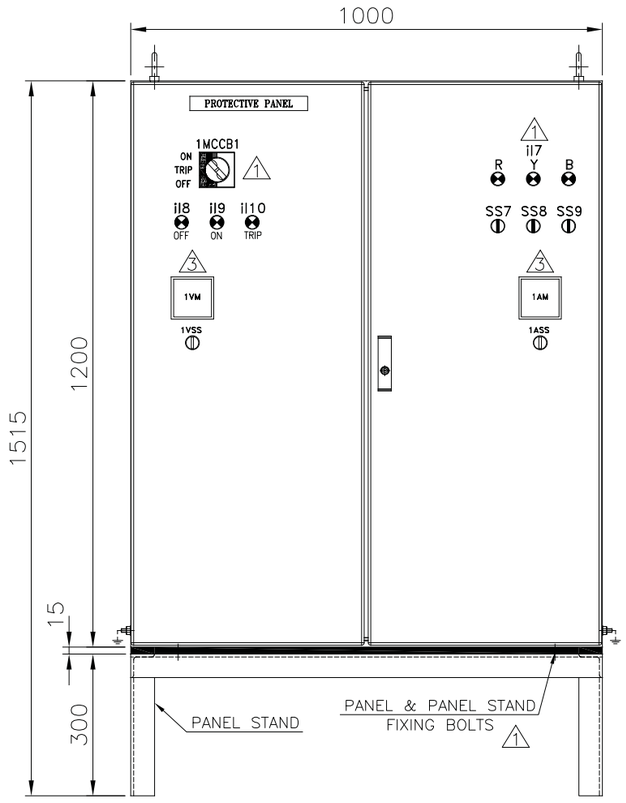
DESCRIPTION: 250-50-10T x 21M POWER HOUSE CRANE (CRANE-1&2)
TITLE : TABLE OF CONTENTS

FURNACE & FOUNDRY EQUIPMENT CO.
CHANDIVALI FARM MUMBAI - 72
FAFECO DRG NO.: OG-06/250-50-10Tx21M/211

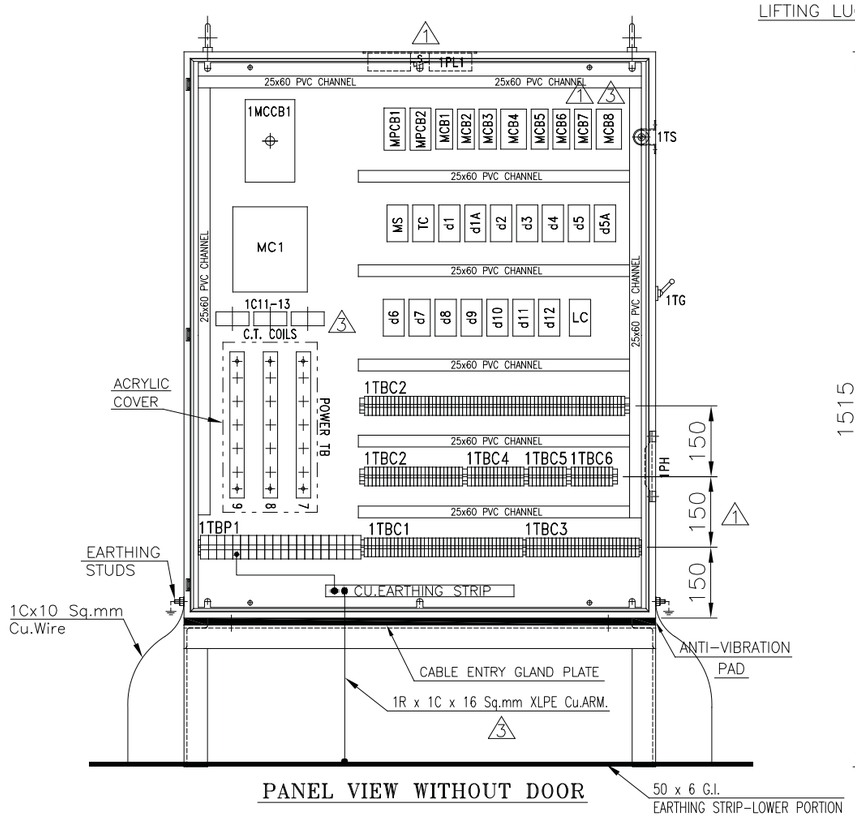
Sheet 2 / 17

THIS IS PART OF TECHNICAL SPECIFICATION PE-TS-437-501-A001A, REV 0

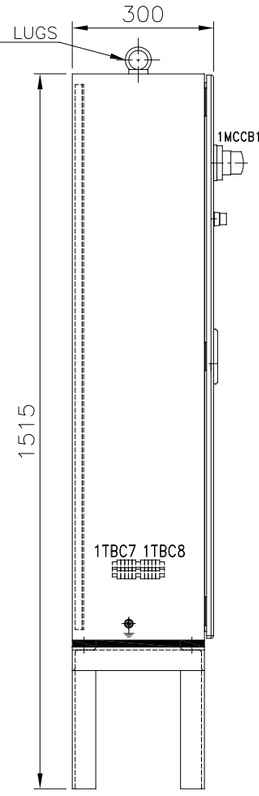
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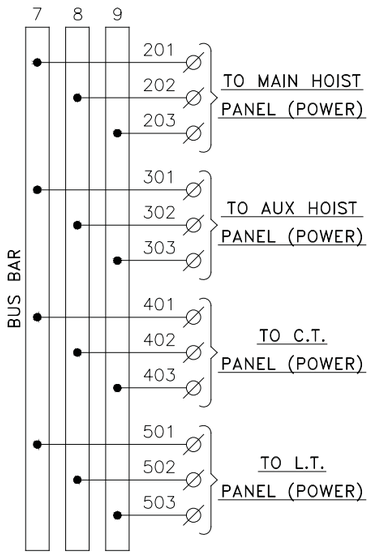
PANEL VIEW WITH DOOR



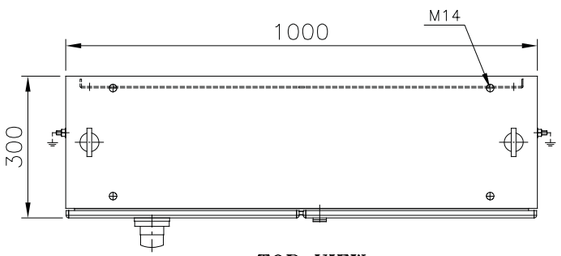
PANEL VIEW WITHOUT DOOR



SIDE VIEW



BUS BAR DETAILS



TOP VIEW

1 NOTES:-

1) ALL DIMENSIONS ARE IN MM.
2) DEGREE OF PROTECTION : IP54
3) ENCLOSURE – 2MM CRCA SHEET
   TOP– 2MM, GLAND PLATE – 2.5MM
4) DOOR – HINGED TYPE
5) COLOR SHADE – RAL 631(LIGHT GRAY)
6) LOCATION – ON BRIDGE
7) APPROX. WEIGHT – 140Kg

1TBP1
POWER TERMINAL STRIP

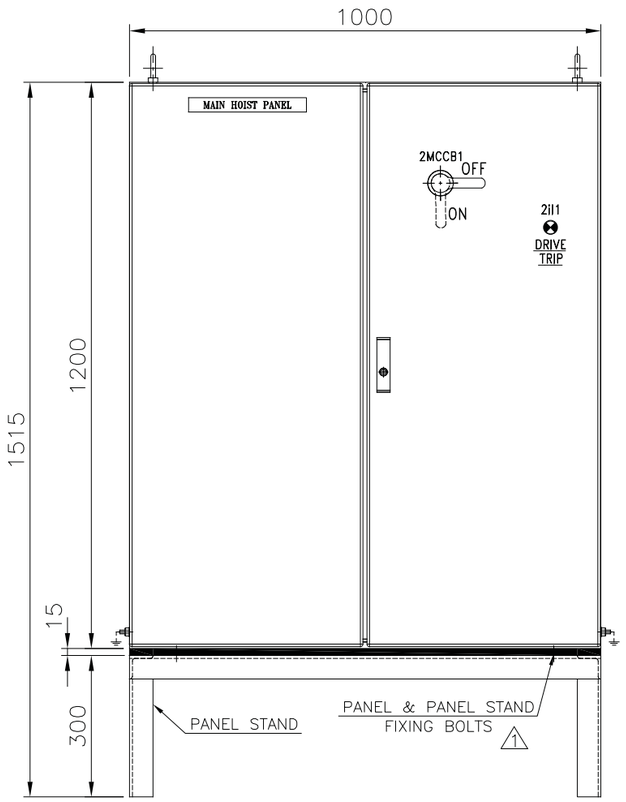
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1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20

1TBC1
CONTROL TERMINAL STRIP

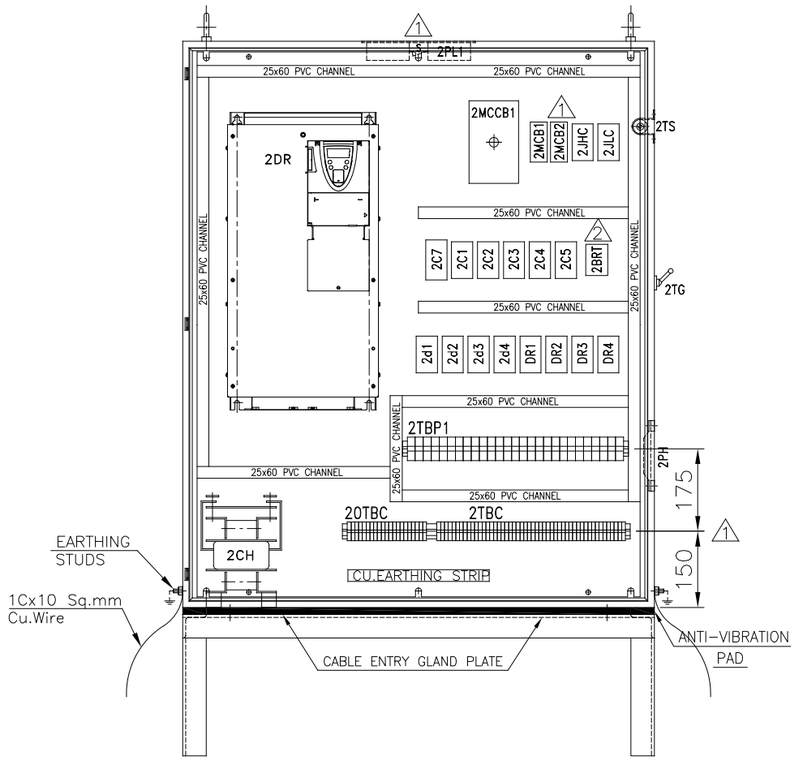
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50	49	48	47	46	45	44	43	42	41	40	39	38	37	36	35	34	33	32	31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1

1TBC2
CONTROL TERMINAL STRIP

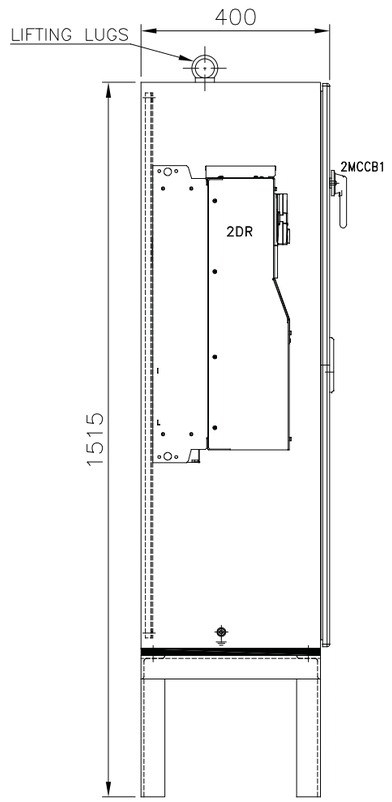
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|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---



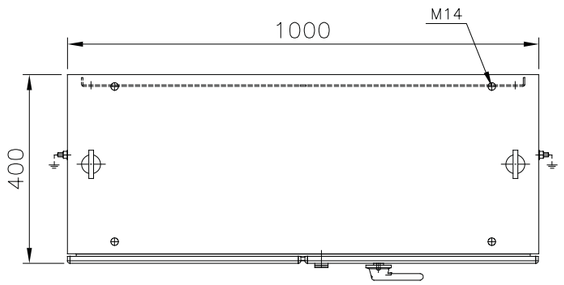
PANEL VIEW WITH DOOR



PANEL VIEW WITHOUT DOOR



SIDE VIEW



TOP VIEW

20TBC
CONTROL TERMINAL STRIP

SPARE	251	221	222	223	224	SPARE	226	227	228	229	230	250	SPARE	226	227	228	229	230	231	250	SPARE
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22

2TBP
POWER TERMINAL STRIP

SPARE	201	202	203	SPARE	2U	2V	2W	PE	SPARE	297	298	SPARE	2R4	2Y4	2B4	SPARE	207	208	SPARE	2R1	2Y1	2B1	2R2	2Y2	2B2	SPARE
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27

2TBC ⚠1
CONTROL TERMINAL STRIP

SPARE	SPARE	250	251	282	277A	235	234	SPARE	682	670B	SPARE	267	266	SPARE	285	284	283	282	SPARE	276B	273B	272B	271B	SPARE	276A	275A	273A	272A	271A	SPARE	276	275	274	273	272	271	SPARE	296	290	257	256	255	251	171	107	58	55	57B	SPARE
50	49	48	47	46	45	44	43	42	41	40	39	38	37	36	35	34	33	32	31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1

⚠1
NOTES:-
1) ALL DIMENSIONS ARE IN MM.
2) DEGREE OF PROTECTION : IP54
3) ENCLOSURE – 2MM CRCA SHEET
   TOP– 2MM, GLAND PLATE – 2.5MM
4) DOOR – HINGED TYPE
5) COLOR SHADE – RAL 631(LIGHT GRAY)
6) LOCATION – ON BRIDGE
7) APPROX. WEIGHT – 160Kg

Issue	Remarks	Name	Date
2	REVISED AS NOTED	DP	30.09.2019
1	REVISED AS NOTED	DP	07.09.2019

Prep. DINESH | Ckd. ABHAY | APPR. SMG | ALL DIMENSIONS ARE IN MM.

CLIENT: BHARAT HEAVY ELECTRICAL LTD
POWER SECTOR
PROJECT ENGINEERING MANAGEMENT
NEW DELHI
BHEL DRG NO. : PE-V0-437-501-A518 ⚠1

FAFECO

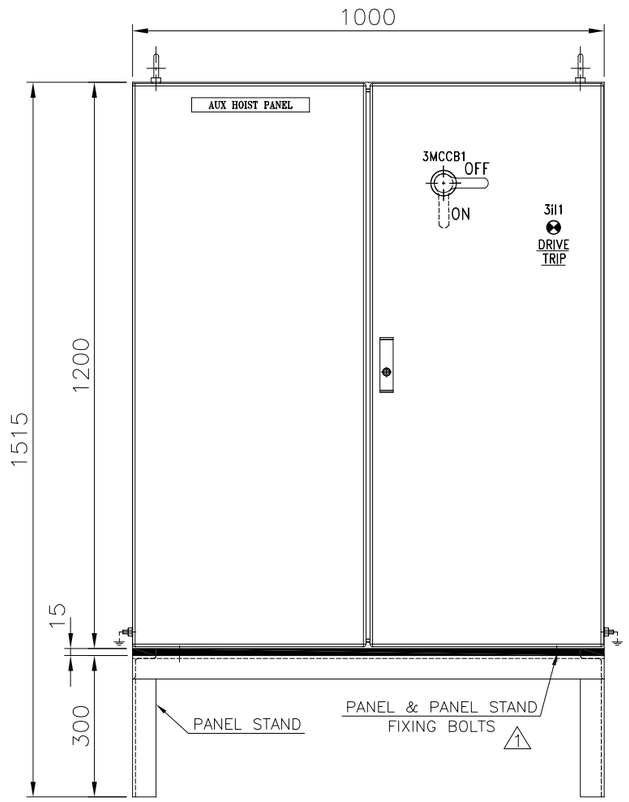
DESCRIPTION: 250-50-10T x 21M POWER HOUSE CRANE (CRANE-1&2)
TITLE : GA of Main Hoist Panel

FURNACE & FOUNDRY EQUIPMENT CO.
CHANDIVALI FARM MUMBAI – 72
FAFECO DRG NO.: OG-06/250-50-10Tx21M/211

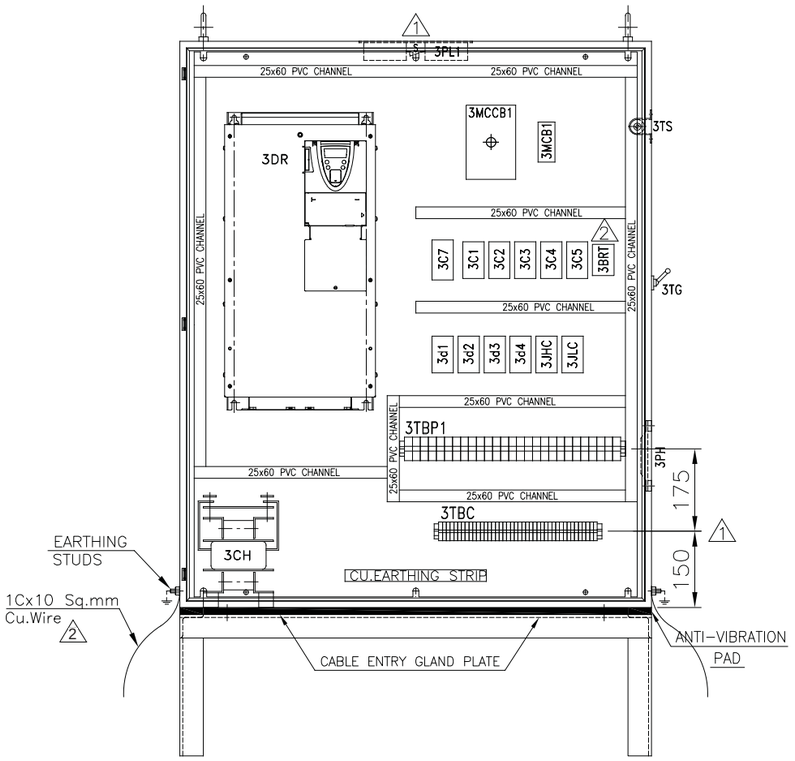
Sheet 4 / 17

THIS IS PART OF TECHNICAL SPECIFICATION PE-TS-437-501-A001A REV 0

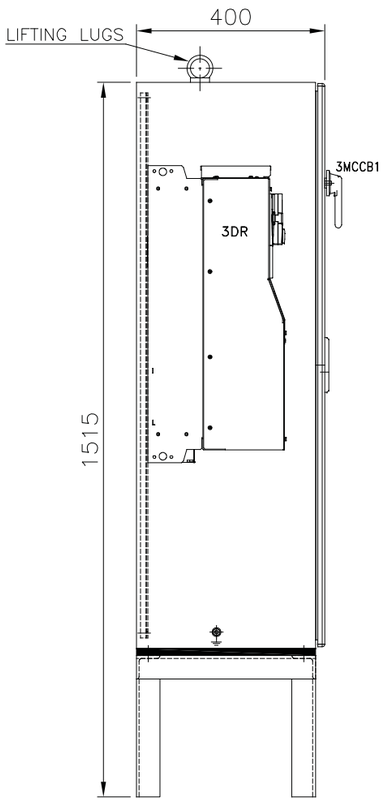
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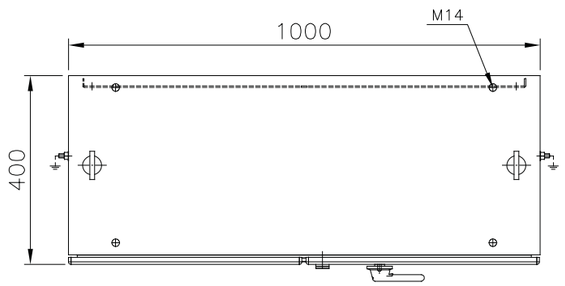
PANEL VIEW WITH DOOR



PANEL VIEW WITHOUT DOOR



SIDE VIEW



TOP VIEW

⚠1
NOTES:–
1) ALL DIMENSIONS ARE IN MM.
2) DEGREE OF PROTECTION : IP54
3) ENCLOSURE – 2MM CRCA SHEET
TOP– 2MM, GLAND PLATE – 2.5MM
4) DOOR – HINGED TYPE
5) COLOR SHADE – RAL 631(LIGHT GRAY)
6) LOCATION – ON BRIDGE
7) APPROX. WEIGHT – 160Kg

3TBP
POWER TERMINAL STRIP

SPARE	301	302	303	SPARE	3U	3V	3W	PE	SPARE	397	398	SPARE	3R4	3Y4	3B4	SPARE	307	308	SPARE	3R1	3Y1	3B1	3R2	3Y2	3B2	SPARE
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27

3TBC ⚠1
CONTROL TERMINAL STRIP

SPARE	SPARE	382	377A	SPARE	367	366	SPARE	385	384	383	382	SPARE	376B	373B	372B	371B	SPARE	376A	375A	373A	372A	371A	SPARE	376	375	374	373	372	371	SPARE	396	390	357	356	355	351	171	107	58	55	57B	SPARE
43	42	41	40	39	38	37	36	35	34	33	32	31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1

Issue	Remarks	Name	Date		
2	REVISED AS NOTED	DP	30.09.2019	Ckd.	ABHAY
1	REVISED AS NOTED	DP	07.09.2019	APPR.	SMG
				ALL DIMENSIONS ARE IN MM.	

CLIENT BHEL

BHARAT HEAVY ELECTRICAL LTD
POWER SECTOR
PROJECT ENGINEERING MANAGEMENT
NEW DELHI

BHEL DRG NO. : PE-V0-437-501-A518 ⚠1

FAFECO

DESCRIPTION: 250-50-10T x 21M POWER HOUSE CRANE (CRANE-1&2)

TITLE : GA of Aux Hoist Panel

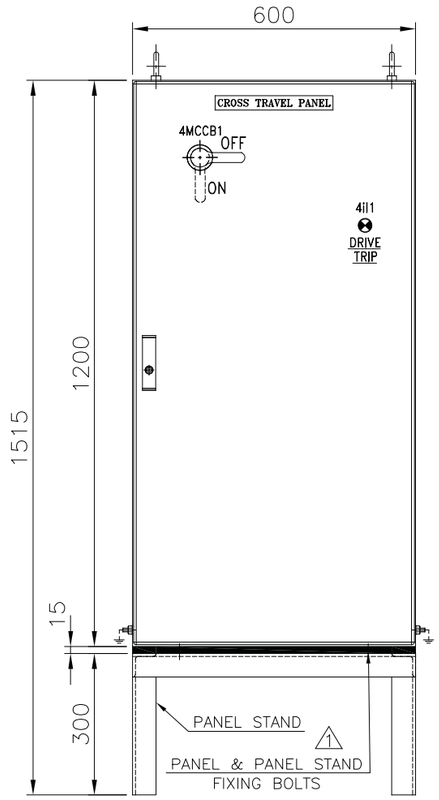
FURNACE & FOUNDRY EQUIPMENT CO.
CHANDIVALI FARM MUMBAI – 72

FAFECO DRG NO.: OG-06/250-50-10Tx21M/211

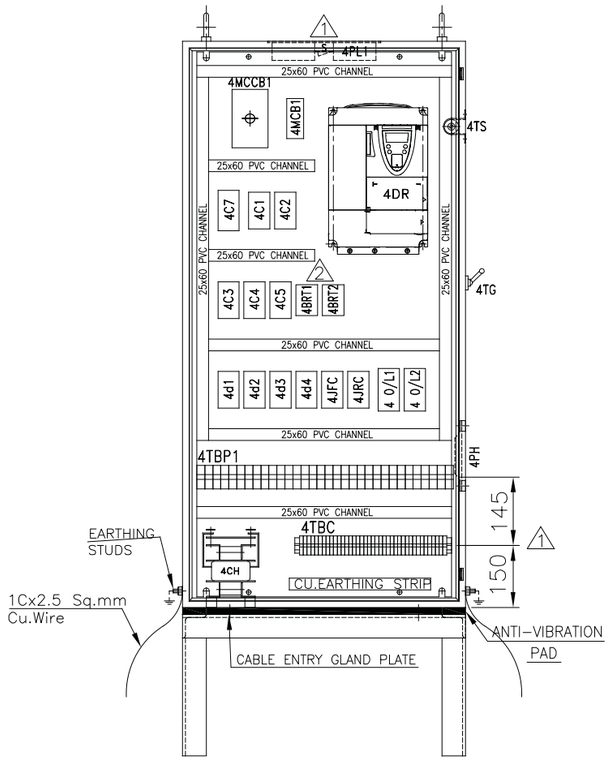
Sheet 5 / 17

THIS IS PART OF TECHNICAL SPECIFICATION PE-TS-437-501-A001A REV 0

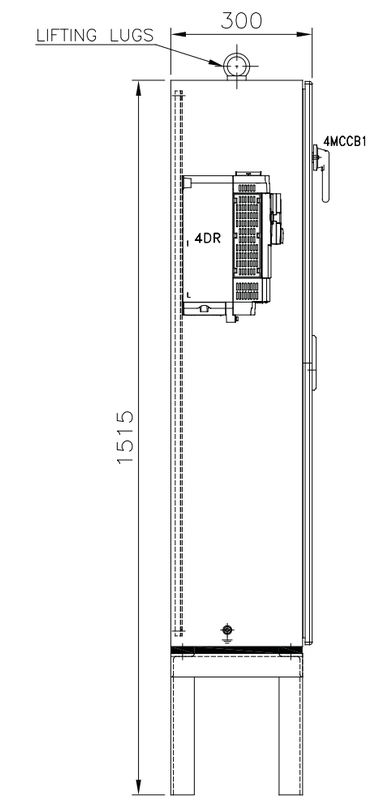
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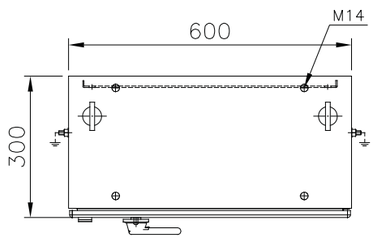
PANEL VIEW WITH DOOR



PANEL VIEW WITHOUT DOOR



SIDE VIEW



TOP VIEW

4TBP
POWER TERMINAL STRIP

SPARE	401	402	403	SPARE	4U1	4V1	4W1	PE1	SPARE	4U2	4V2	4W2	PE2	SPARE	497	498	SPARE	4R4	4Y4	4B4	SPARE	407	408	409	SPARE	4R1	4Y1	4B1	4R2	4Y2	4B2	SPARE
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33

4TBC
CONTROL TERMINAL STRIP

SPARE	467	466	SPARE	485	384	483	482	SPARE	476B	473B	472B	471B	SPARE	476A	475A	473A	472A	471A	SPARE	476	475	474	473	472	471	SPARE	496	490	457	456	455	451	171	107	58	55	57B	SPARE
39	38	37	36	35	34	33	32	31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1

⚠ NOTES:-

1) ALL DIMENSIONS ARE IN MM.
2) DEGREE OF PROTECTION : IP54
3) ENCLOSURE – 2MM CRCA SHEET
   TOP– 2MM, GLAND PLATE – 2.5MM
4) DOOR – HINGED TYPE
5) COLOR SHADE – RAL 631(LIGHT GRAY)
6) LOCATION – ON BRIDGE
7) APPROX. WEIGHT – 90Kg

Issue	Remarks	Name	Date
2	REVISED AS NOTED	DP	30.09.2019
1	REVISED AS NOTED	DP	07.09.2019

Prep. DINESH | Ckd. ABHAY | APPR. SMG | ALL DIMENSIONS ARE IN MM.

CLIENT: BHARAT HEAVY ELECTRICAL LTD
POWER SECTOR
PROJECT ENGINEERING MANAGEMENT
NEW DELHI
BHEL DRG NO. : PE-V0-437-501-A518 ⚠1

FAFECO

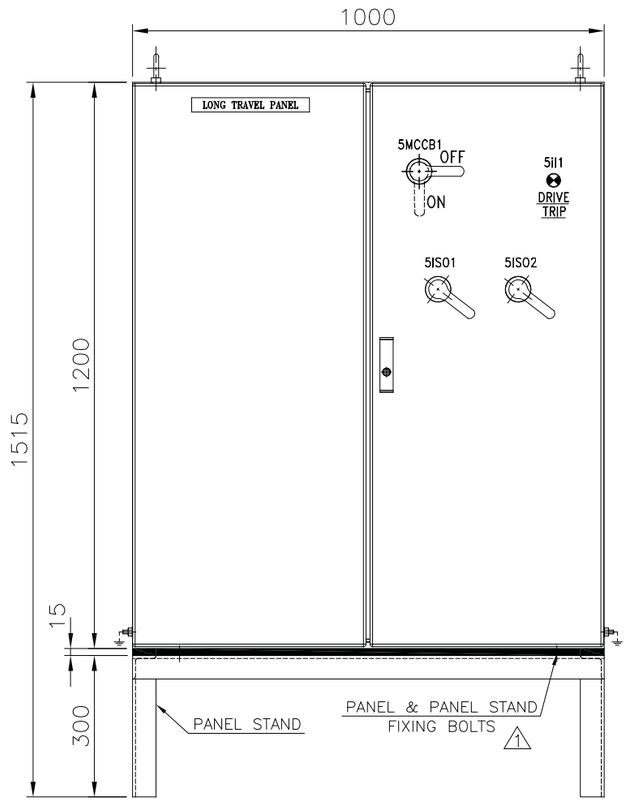
DESCRIPTION: 250-50-10T x 21M POWER HOUSE CRANE (CRANE-1&2)
TITLE : GA of Cross Tarverse Panel

FURNACE & FOUNDRY EQUIPMENT CO.
CHANDIVALI FARM MUMBAI – 72
FAFECO DRG NO.: OG-06/250-50-10Tx21M/211

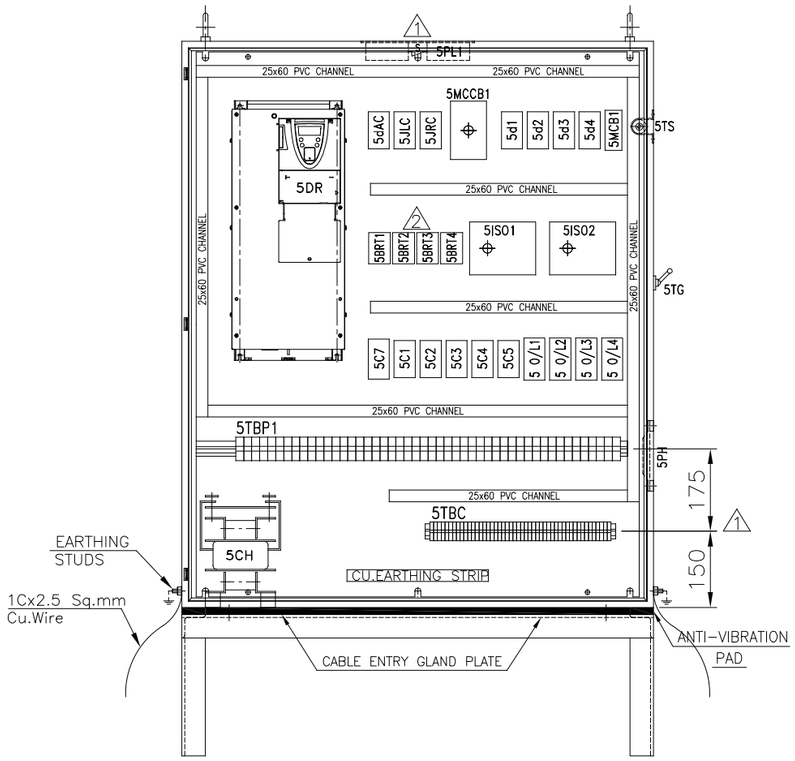
Sheet 6/17

THIS IS PART OF TECHNICAL SPECIFICATION PE-TS-437-501-A001A REV 0

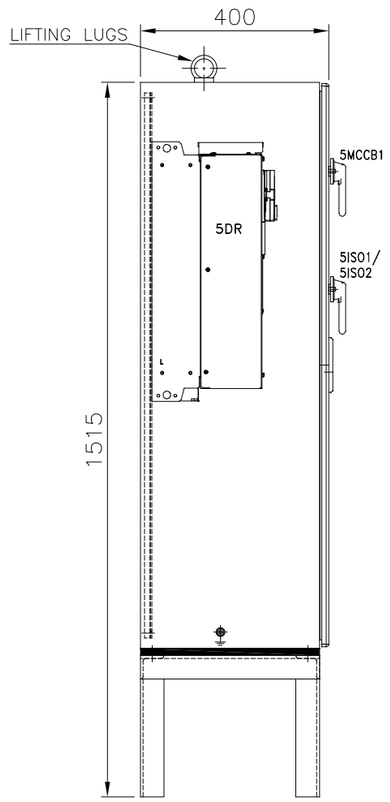
A3.dwg



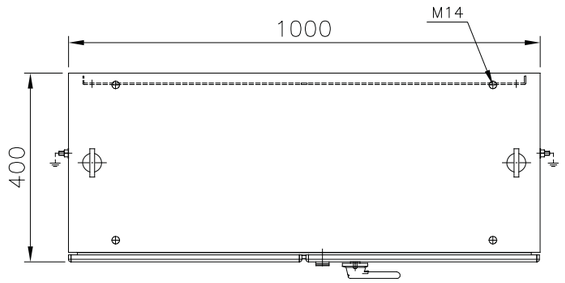
PANEL VIEW WITH DOOR



PANEL VIEW WITHOUT DOOR



SIDE VIEW



TOP VIEW

△1
NOTES:–
1) ALL DIMENSIONS ARE IN MM.
2) DEGREE OF PROTECTION : IP54
3) ENCLOSURE – 2MM CRCA SHEET
TOP– 2MM, GLAND PLATE – 2.5MM
4) DOOR – HINGED TYPE
5) COLOR SHADE – RAL 631(LIGHT GRAY)
6) LOCATION – ON BRIDGE
7) APPROX. WEIGHT – 160Kg

5TBP
POWER TERMINAL STRIP

SPARE	501	502	503	SPARE	5U1	5V1	5W1	PE1	5U2	5V2	5W2	PE2	5U3	5V3	5W3	PE3	5U4	5V4	5W4	PE4	SPARE	597	598	SPARE	5R4	5R4	5Y4	5Y4	5B4	5B4	SPARE	507	508	509	510	511	512	513	514	SPARE	5R1	5Y1	5B1	5R2	5Y2	5B2	SPARE
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48

5TBC
CONTROL TERMINAL STRIP

SPARE	SPARE	550	568C	568B	568B	568A	550	551	SPARE	567	566	SPARE	585	584	583	582	SPARE	576B	573B	572B	571B	SPARE	576A	575A	573A	572A	571A	SPARE	576	575	574	573	572	571	SPARE	596	590	557	556	555	551	171	107	58	55	57B	SPARE
48	47	46	45	44	43	42	41	40	39	38	37	36	35	34	33	32	31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1

Issue	Remarks	Name	Date
2	REVISED AS NOTED	DP	30.09.2019
1	REVISED AS NOTED	DP	07.09.2019

Prep. DINESH | Ckd. ABHAY | APPR. SMG | ALL DIMENSIONS ARE IN MM.

CLIENT BHEL

BHARAT HEAVY ELECTRICAL LTD
POWER SECTOR
PROJECT ENGINEERING MANAGEMENT
NEW DELHI
BHEL DRG NO. : PE-V0-437-501-A518 △1

FAFECO

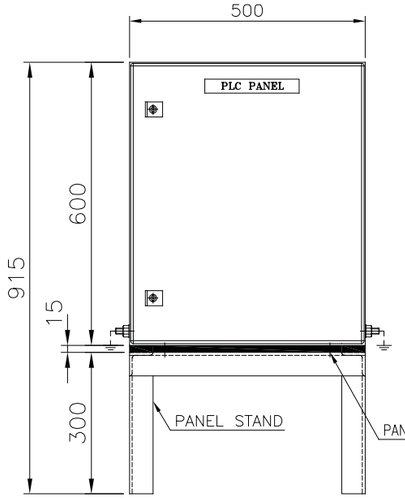
DESCRIPTION: 250-50-10T x 21M POWER HOUSE CRANE (CRANE-1&2)
TITLE : GA of Long Travel Panel

FURNACE & FOUNDRY EQUIPMENT CO.
CHANDIVALI FARM MUMBAI – 72
FAFECO DRG NO.: OG-06/250-50-10Tx21M/211

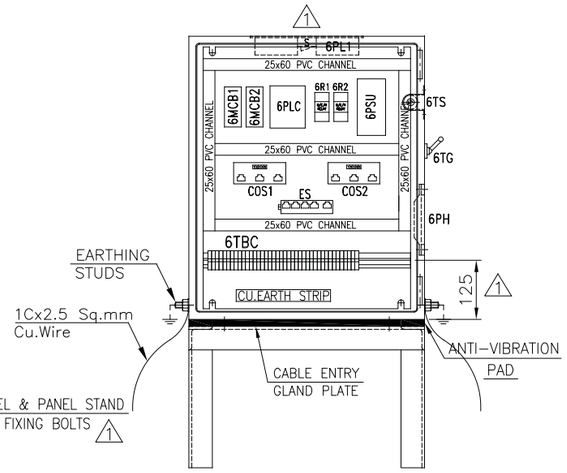
Sheet 7 / 17

THIS IS PART OF TECHNICAL SPECIFICATION PE-TS-437-501-A001A REV 0

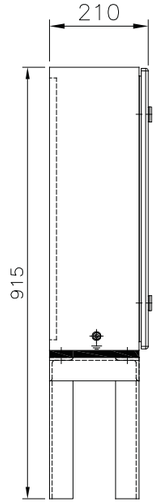
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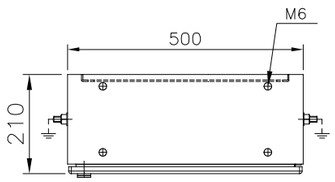
PANEL VIEW WITH DOOR



PANEL VIEW WITHOUT DOOR



SIDE VIEW



TOP VIEW

2

PLC PANEL

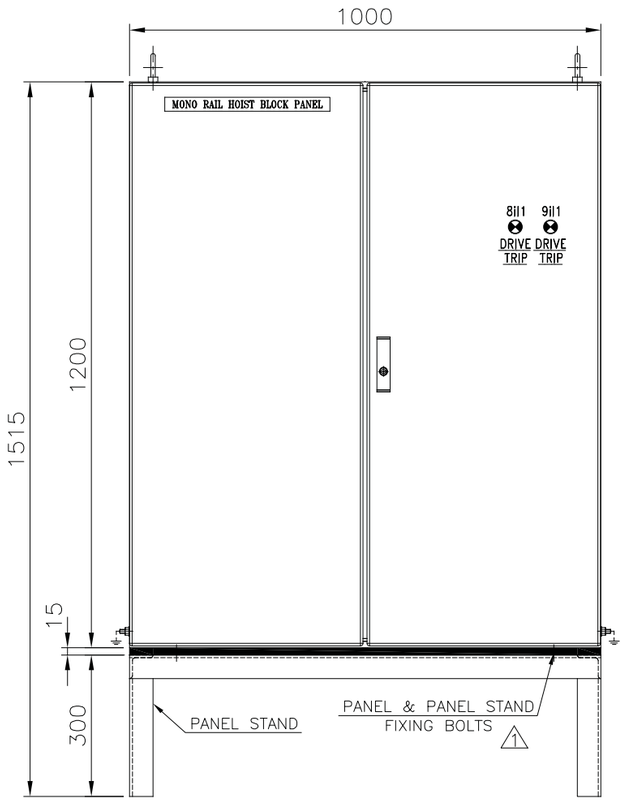
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NOTES:-

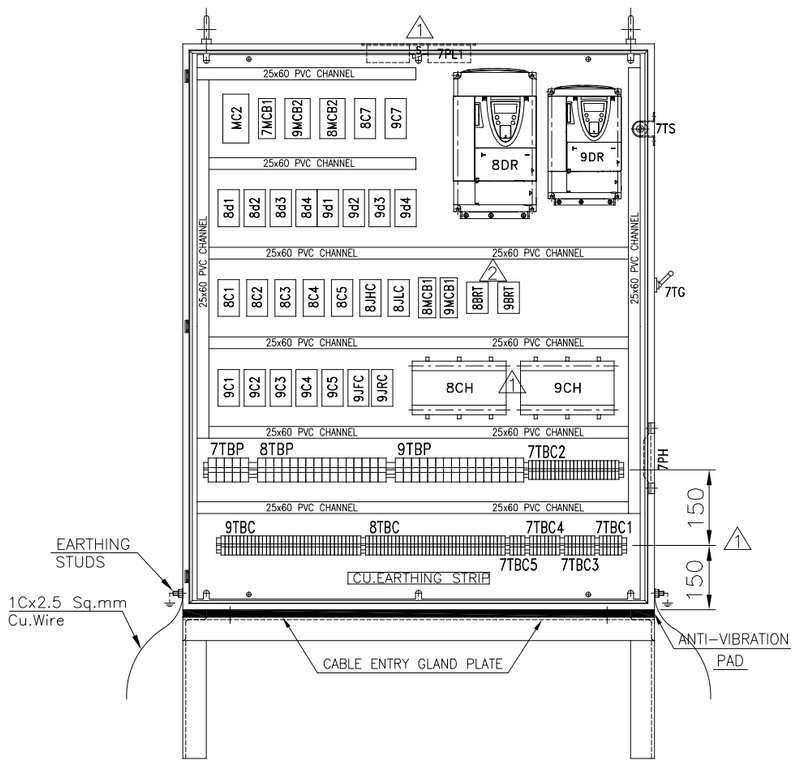
1) ALL DIMENSIONS ARE IN MM.
2) DEGREE OF PROTECTION : IP54
3) ENCLOSURE – 2MM CRCA SHEET TOP– 2MM, GLAND PLATE–2.5MM
4) DOOR – HINGED TYPE
5) COLOR SHADE – RAL 631(LIGHT GRAY)
6) LOCATION – ON BRIDGE
7) APPROX. WEIGHT – 40Kg

6TBC
CONTROL TERMINAL STRIP

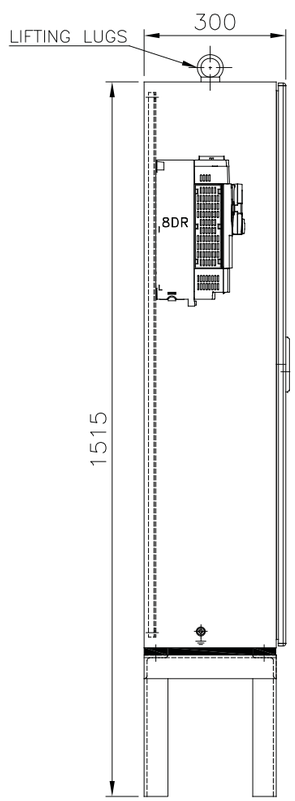
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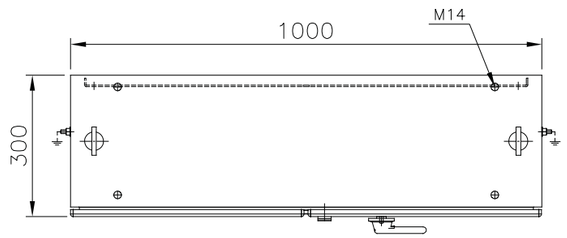
PANEL VIEW WITH DOOR



PANEL VIEW WITHOUT DOOR



SIDE VIEW



TOP VIEW

⚠1

NOTES:–

1) ALL DIMENSIONS ARE IN MM.
2) DEGREE OF PROTECTION : IP54
3) ENCLOSURE – 2MM CRCA SHEET
   TOP– 2MM, GLAND PLATE – 2.5MM
4) DOOR – HINGED TYPE
5) COLOR SHADE – RAL 631(LIGHT GRAY)
6) LOCATION – ON BRIDGE
7) APPROX. WEIGHT – 125Kg

7TBP
POWER TERMINAL STRIP

SPARE	4	5	6	SPARE
1	2	3	4	5

8TBP
POWER TERMINAL STRIP

SPARE	8U	8V	8W	PE	SPARE	897	898	SPARE	8R4	8B4	SPARE	SPARE	807	808	SPARE
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16

9TBP
POWER TERMINAL STRIP

SPARE	9U	9V	9W	PE	SPARE	997	998	SPARE	9R4	9B4	SPARE	SPARE	907	908	SPARE
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16

7TBC1
CONTROL TERMINAL

SPARE	SPARE	58	55	57B	SPARE
6	5	4	3	2	1

7TBC2
CONTROL TERMINAL STRIP

SPARE	757	756	752	752	755	754	753	751	SPARE	761	759	SPARE	759	758	SPARE	707	707	771	771	SPARE	172	107	SPARE
24	23	22	21	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1

7TBC3
CONTROL TERMINAL STRIP

SPARE	750	761	758	756	752	753	SPARE
8	7	6	5	4	3	2	1

7TBC4
CONTROL TERMINAL STRIP

SPARE	750	761	758	757	752	754	SPARE
8	7	6	5	4	3	2	1

7TBC5
CONTROL TERMINAL STRIP

SPARE	758	755	SPARE
4	3	2	1

9TBC
CONTROL TERMINAL STRIP

SPARE	967	966	SPARE	985	984	983	982	SPARE	976B	973B	972B	971B	SPARE	976A	975A	973A	972A	971A	SPARE	976	975	974	973	972	971	SPARE	957	956	955	951	771	707	SPARE	SPARE	SPARE
37	36	35	34	33	32	31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1

8TBC
CONTROL TERMINAL STRIP

SPARE	867	866	SPARE	885	884	883	882	SPARE	876B	873B	872B	871B	SPARE	876A	875A	873A	872A	871A	SPARE	876	875	874	873	872	871	SPARE	857	856	855	851	771	707	SPARE	SPARE	SPARE
37	36	35	34	33	32	31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1

Issue	Remarks	Name	Date
2	REVISED AS NOTED	DP	30.09.2019
1	REVISED AS NOTED	DP	07.09.2019

Prep. DINESH | Ckd. ABHAY | APPR. SMG | ALL DIMENSIONS ARE IN MM.

CLIENT BHEL

BHARAT HEAVY ELECTRICAL LTD
POWER SECTOR
PROJECT ENGINEERING MANAGEMENT
NEW DELHI

BHEL DRG NO. : PE-V0-437-501-A518 ⚠1

FAFECO

DESCRIPTION: 250-50-10T x 21M POWER HOUSE CRANE (CRANE-1&2)

TITLE : GA of Mono Rail hoist Panel

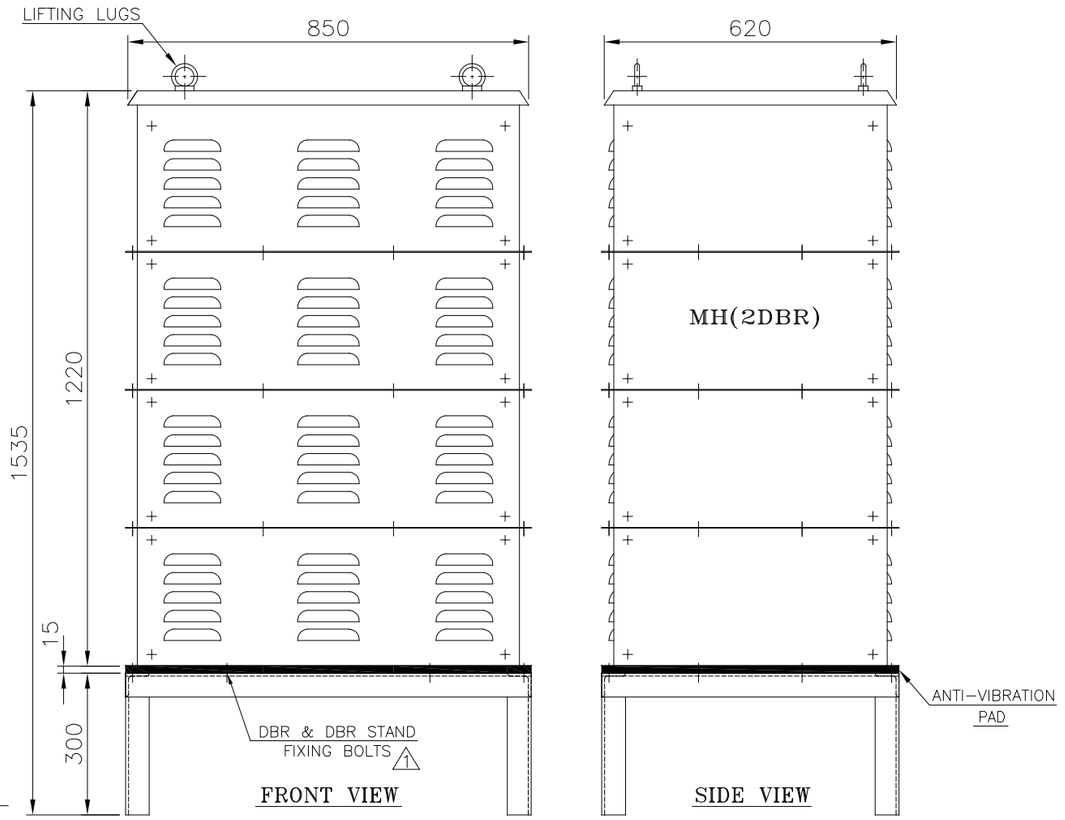
FURNACE & FOUNDRY EQUIPMENT CO.
CHANDIVALI FARM MUMBAI – 72

FAFECO DRG NO.: OG-06/250-50-10Tx21M/211

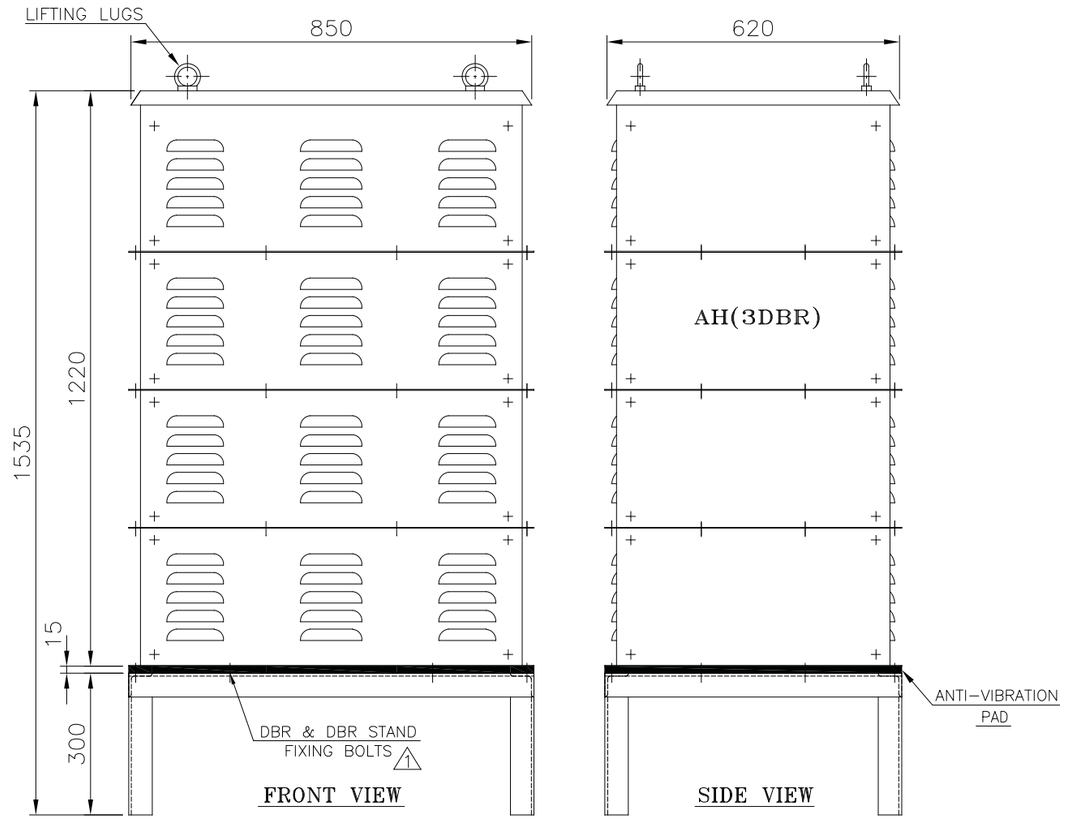
Sheet 9/17

THIS IS PART OF TECHNICAL SPECIFICATION PE-TS-437-501-A001A REV 0

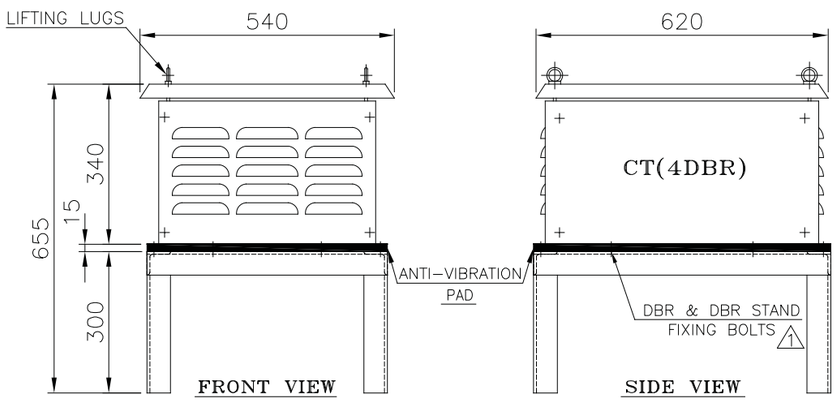
A3.dwg



MAIN HOIST DBR BOX



AUX HOIST DBR BOX

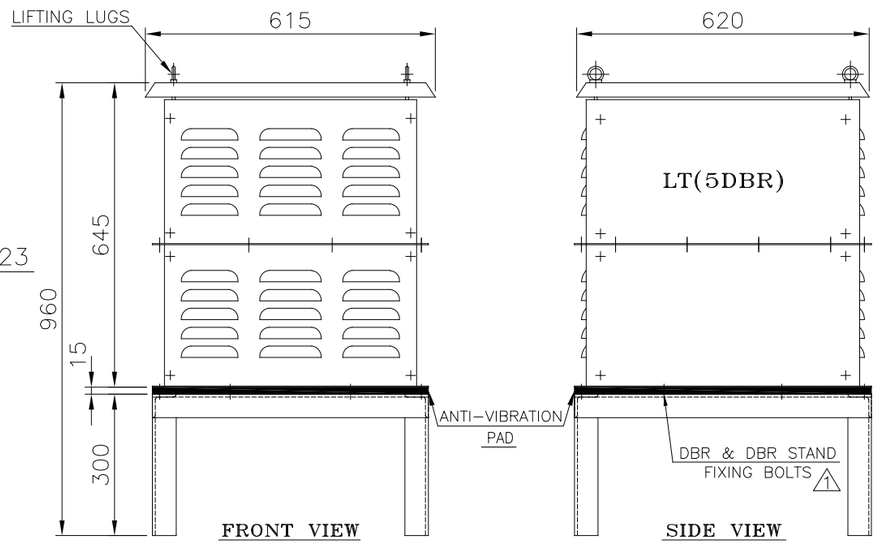


CROSS TRAVEL (4DBR)

1

NOTES:-

1) ALL DIMENSIONS ARE IN MM.
2) DEGREE OF PROTECTION : IP23
3) LOCATION - ON BRIDGE

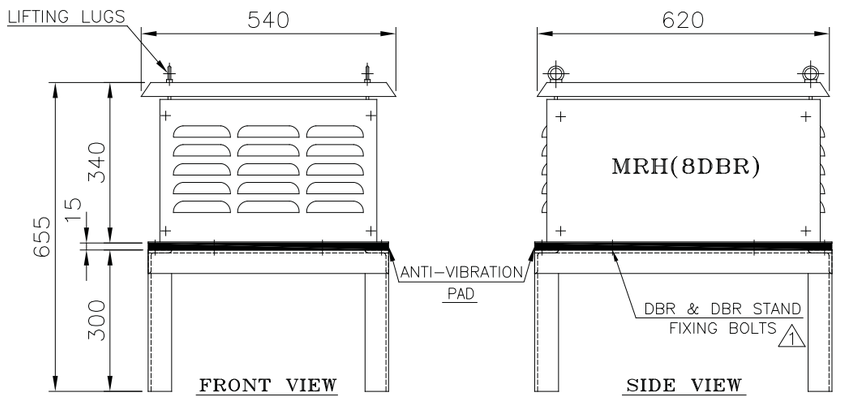


LONG TRAVEL (5DBR)

				Prep.	DINESH	CLIENT BHEL	BHARAT HEAVY ELECTRICAL LTD POWER SECTOR PROJECT ENGINEERING MANAGEMENT NEW DELHI	FAFECO	DESCRIPTION: 250-50-10T x 21M POWER HOUSE CRANE (CRANE-1&2)	FURNACE & FOUNDRY EQUIPMENT CO. CHANDIVALI FARM MUMBAI - 72	Sheet 10 / 17
				Ckd.	ABHAY						
1	REVISED AS NOTED	DP	07.09.2019	APPR.	SMG						
Issue	Remarks	Name	Date	ALL DIMENSIONS ARE IN MM.		BHEL DRG NO. : PE-V0-437-501-A518 1			TITLE : GA of MH, AH, CT, LT DBR box	FAFECO DRG NO.: OG-06/250-50-10Tx21M/211	

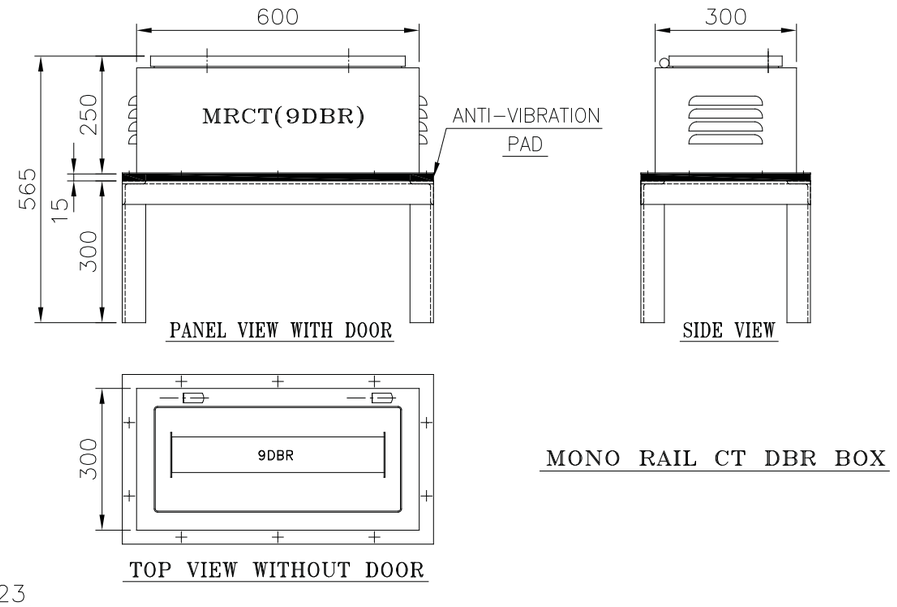
THIS IS PART OF TECHNICAL SPECIFICATION PE-TS-437-501-A001A REV 0

A3.dwg

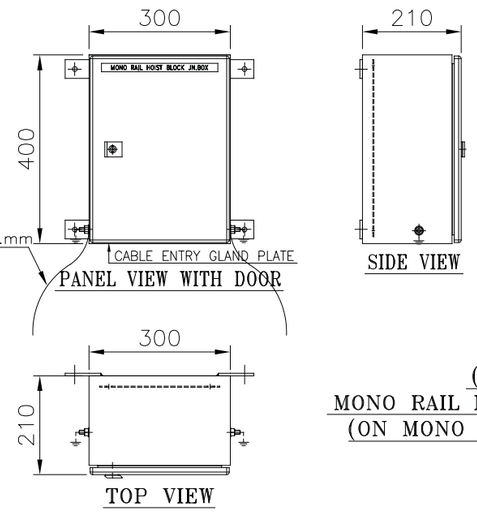


MONO RAIL HOIST (8DBR)

NOTES:-
1) ALL DIMENSIONS ARE IN MM.
2) DEGREE OF PROTECTION : IP23
3) LOCATION - ON BRIDGE



MONO RAIL CT DBR BOX



1) ALL DIMENSIONS ARE IN MM.
2) DEGREE OF PROTECTION : IP42
3) ENCLOSURE - 2MM CRCA SHEET
4) COLOR SHADE - RAL 631(LIGHT GRAY)
5) LOCATION - ON MONO RAIL HOIST BLOCK

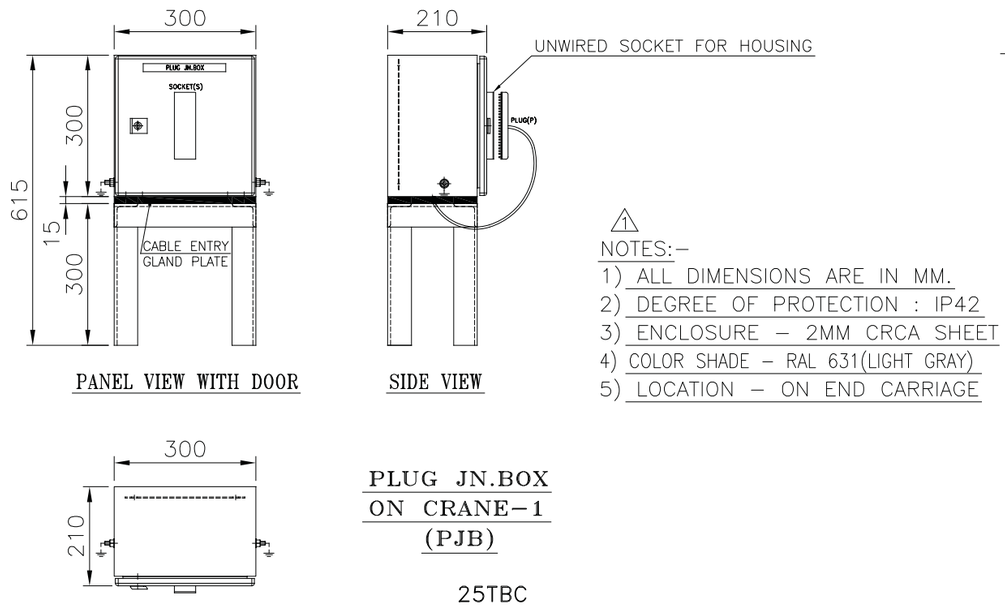
(MRHBJB)
MONO RAIL HOIST BLOCK JN.BOX
(ON MONO RAIL HOIST BLOCK)

24TBP
CONTROL TERMINAL STRIP

SPARE	8U	8V	8W	PE	SPARE	807	808	SPARE	9U	9V	9W	PE	SPARE	907	908	SPARE
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17

24TBC
CONTROL TERMINAL STRIP

SPARE	985	984	983	982	SPARE	885	884	883	882	SPARE	759	758	SPARE
14	13	12	11	10	9	8	7	6	5	4	3	2	1



1) ALL DIMENSIONS ARE IN MM.
2) DEGREE OF PROTECTION : IP42
3) ENCLOSURE - 2MM CRCA SHEET
4) COLOR SHADE - RAL 631(LIGHT GRAY)
5) LOCATION - ON END CARRIAGE

PLUG JN.BOX
ON CRANE-1
(PJB)

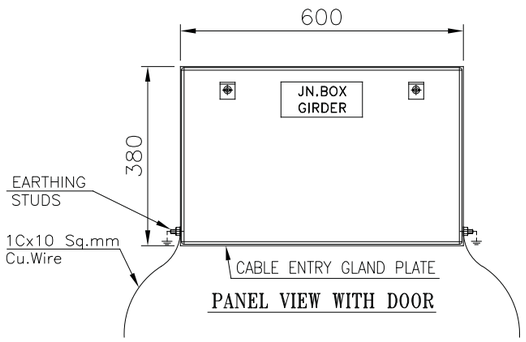
25TBC
CONTROL TERMINAL STRIP

SPARE	145	152	153	154	107	159	160	161	162	SPARE	226	227	228	229	230	231	250	SPARE	SPARE
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20

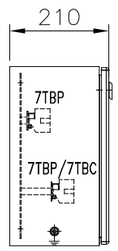
THIS IS PART OF TECHNICAL SPECIFICATION PE-TS-437-501-A001/A REV 0

				Prep.	DINESH	CLIENT	BHARAT HEAVY ELECTRICAL LTD POWER SECTOR PROJECT ENGINEERING MANAGEMENT NEW DELHI	DESCRIPTION: 250-50-10T x 21M POWER HOUSE CRANE (CRANE-1&2)	FURNACE & FOUNDRY EQUIPMENT CO. CHANDIVALI FARM MUMBAI - 72	Sheet 11 / 17
				Ckd.	ABHAY					
1	REVISED AS NOTED	DP	07.09.2019	APPR.	SMG					
Issue	Remarks	Name	Date	ALL DIMENSIONS ARE IN MM.		BHEL DRG NO. : PE-V0-437-501-A518 1		TITLE : GA of Mono Rail hoist, CT DBR & Mono Rail hoist block jn.box, Plug jn.box	FAFECO DRG NO.: OG-06/250-50-10Tx21M/211	

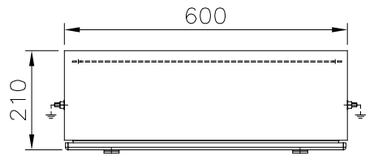
A3.dwg



PANEL VIEW WITH DOOR



SIDE VIEW



TOP VIEW

JN.BOX ON GIRDER (JBG)

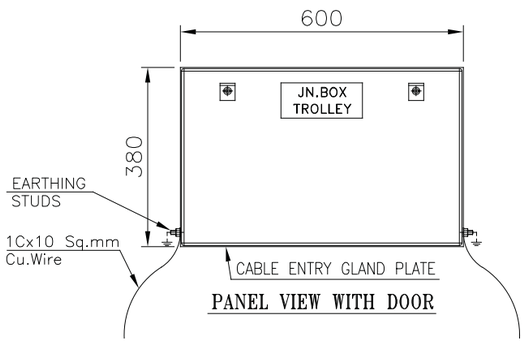
NOTES:–
1) ALL DIMENSIONS ARE IN MM.
2) DEGREE OF PROTECTION : IP54
3) ENCLOSURE – 2MM CRCA SHEET
4) COLOR SHADE – RAL 631(LIGHT GRAY)
5) LOCATION – ON GIRDER

11TBP
POWER TERMINAL STRIP

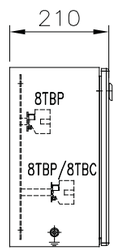
SPARE	2U	2V	2W	PE	SPARE	2R4	2Y4	2B4	SPARE	207	208	SPARE	3U	3V	3W	PE	SPARE	3R4	3Y4	3B4	SPARE	307	308	SPARE	4U1	4V1	4W1	PE1	4U2	4V2	4W2	PE2	SPARE	4R4	4Y4	4B4	SPARE	407	408	409	410	SPARE
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43

11TBC
CONTROL TERMINAL STRIP

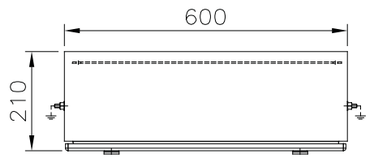
SPARE	031	030	021	020	SPARE	676	675	670A	370A	385	384	383	382	SPARE	674	673	670	670	285	284	283	282	SPARE	150	SPARE	149	SPARE
28	27	26	25	24	23	22	21	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1



PANEL VIEW WITH DOOR



SIDE VIEW



TOP VIEW

JN.BOX ON TROLLEY (JBT)

NOTES:–
1) ALL DIMENSIONS ARE IN MM.
2) DEGREE OF PROTECTION : IP54
3) ENCLOSURE – 2MM CRCA SHEET
4) COLOR SHADE – RAL 631(LIGHT GRAY)
5) LOCATION – ON TROLLEY

12TBP
POWER TERMINAL STRIP

SPARE	2U	2V	2W	PE	SPARE	2R4	2Y4	2B4	SPARE	207	208	SPARE	3U	3V	3W	PE	SPARE	3R4	3Y4	3B4	SPARE	307	308	SPARE	4U1	4V1	4W1	PE1	4U2	4V2	4W2	PE2	SPARE	4R4	4Y4	4B4	SPARE	407	408	409	410	SPARE
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43

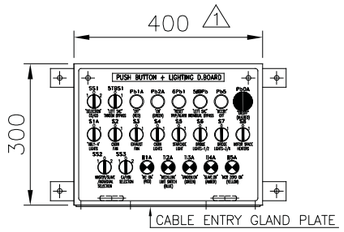
12TBC
CONTROL TERMINAL STRIP

SPARE	031	030	021	020	SPARE	676	675	670A	370A	385	384	383	382	SPARE	674	673	670	670	285	284	283	282	SPARE	150	149A	149	SPARE
28	27	26	25	24	23	22	21	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1

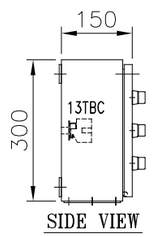
				Prep.	DINESH	CLIENT	BHARAT HEAVY ELECTRICAL LTD POWER SECTOR PROJECT ENGINEERING MANAGEMENT NEW DELHI	FAFECO	DESCRIPTION: 250–50–10T x 21M POWER HOUSE CRANE (CRANE–1&2)	FURNACE & FOUNDRY EQUIPMENT CO. CHANDIVALI FARM MUMBAI – 72	Sheet 12 / 17
				Ckd.	ABHAY						
1	REVISED AS NOTED	DP	07.09.2019	APPR.	SMG						
Issue	Remarks	Name	Date	ALL DIMENSIONS ARE IN MM.		BHEL DRG NO. : PE–V0–437–501–A518 /1		TITLE : GA of Girder & Trolley jn. box	FAFECO DRG NO.: OG–06/250–50–10Tx21M/211		

THIS IS PART OF TECHNICAL SPECIFICATION PE-TS-437-501-A001A REV 0

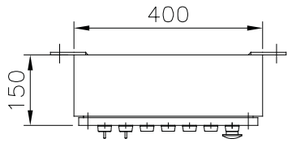
A3.dwg



PANEL VIEW WITH DOOR



SIDE VIEW



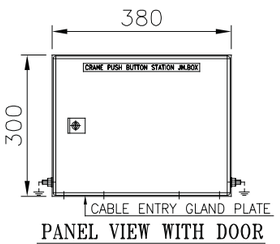
TOP VIEW

NOTES:–
1) ALL DIMENSIONS ARE IN MM.
2) DEGREE OF PROTECTION : IP42
3) DOOR – HINGED TYPE
5) COLOR SHADE – RAL 631(LIGHT GRAY)
5) LOCATION – IN CABIN

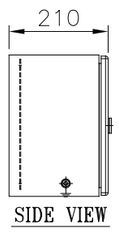
(PB+LDB)
PUSH BUTTON + LIGHTING D.BOARD
(IN OPERATER'S CABIN)

13TBC
CONTROL TERMINAL STRIP

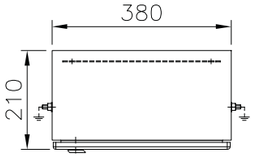
SPARE	106	109	110	108	107	126	127A	127B	127C	127D	128	107	107	105	131	132	138	141	143	148	154	107	158	160	166B	166C	166D	SPARE	670B	681	126A	126B	165	165A	107	105	57B	57B	57B	57B	57B	57B	57B	57B	55	62	63	64	65	66	67	SPARE
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52



PANEL VIEW WITH DOOR



SIDE VIEW



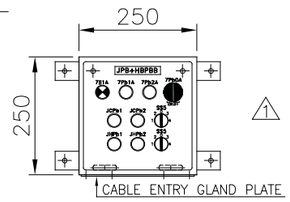
TOP VIEW

NOTES:–
1) ALL DIMENSIONS ARE IN MM.
2) DEGREE OF PROTECTION : IP42
3) DOOR – HINGED TYPE
5) COLOR SHADE – RAL 631(LIGHT GRAY)
5) LOCATION – ON BRIDGE

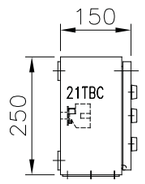
(CPBSJB)
CRANE PUSH BUTTON
STATION JN.BOX

14TBC
CONTROL TERMINAL STRIP

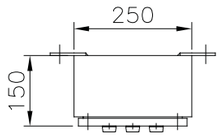
SPARE	114	115	116	117	105	131	132	139	142	144	148	154	107	SPARE	271A	272A	273A	275A	276A	SPARE	371A	372A	373A	375A	376A	SPARE	471A	472A	473A	475A	476A	SPARE	571A	572A	573A	575A	576A	SPARE
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39



PANEL VIEW WITH DOOR



SIDE VIEW

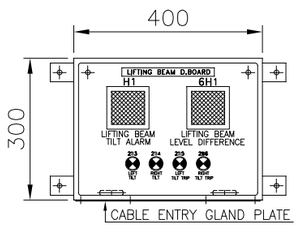


TOP VIEW

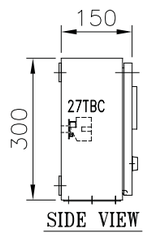
(JPB+HBPBB)
JOG PUSH BUTTON +
HOIST BLOCK PUSH BUTTON BOARD
(IN OPERATER'S CABIN)

21TBC
CONTROL TERMINAL STRIP

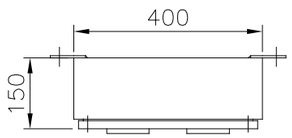
SPARE	753	752	756	758	761	750	SPARE	166C	166D	167A	168A	167B	168B	167C	168C	167D	168D	169A	170A	169B	170B	SPARE
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23



PANEL VIEW WITH DOOR



SIDE VIEW

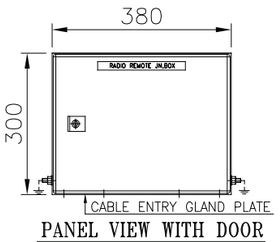


TOP VIEW

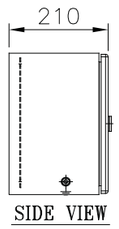
(LBDB)
LIFTING BEAM D.BOARD
(IN OPERATER'S CABIN)

27TBC
CONTROL TERMINAL STRIP

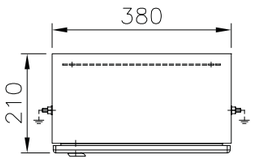
SPARE	226	227	228	229	230	250	SPARE	651A	650	SPARE
1	2	3	4	5	6	7	8	9	10	11



PANEL VIEW WITH DOOR



SIDE VIEW



TOP VIEW

NOTES:–
1) ALL DIMENSIONS ARE IN MM.
2) DEGREE OF PROTECTION : IP42
3) DOOR – HINGED TYPE
5) COLOR SHADE – RAL 631(LIGHT GRAY)
5) LOCATION – ON BRIDGE

(RRJB)
RADIO REMOTE JN.BOX

23TBC
CONTROL TERMINAL STRIP

SPARE	755	758	SPARE	871B	872B	873B	876B	SPARE	971B	972B	973B	976B	SPARE	SPARE
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15

15TBC
CONTROL TERMINAL STRIP

SPARE	129	131	132	134	135	140	148	SPARE	271B	272B	273B	276B	SPARE	371B	372B	373B	376B	SPARE	471B	472B	473B	476B	SPARE	571B	572B	573B	576B	SPARE	251	221	222	223	224	SPARE
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35

Issue	Remarks	Name	Date
1	REVISED AS NOTED	DP	07.09.2019

Prep. DINESH
Ckd. ABHAY
APPR. SMG
ALL DIMENSIONS ARE IN MM.

CLIENT BHEL

BHARAT HEAVY ELECTRICAL LTD
POWER SECTOR
PROJECT ENGINEERING MANAGEMENT
NEW DELHI

BHEL DRG NO. : PE-V0-437-501-A518 ⚠1

FAFECO

DESCRIPTION: 250-50-10T x 21M POWER HOUSE CRANE (CRANE-1&2)

TITLE : GA of PB+LDB, JPB+HBPBB, LBDB & Crane Push button station & Radio remote jn.box

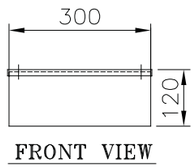
FURNACE & FOUNDRY EQUIPMENT CO.
CHANDIVALI FARM MUMBAI – 72

FAFECO DRG NO.: OG-06/250-50-10Tx21M/211

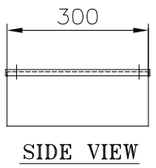
Sheet 13 / 17

THIS IS PART OF TECHNICAL SPECIFICATION PE-TS-437-501-A001A REV 0

A3.dwg



FRONT VIEW



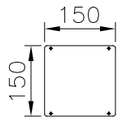
SIDE VIEW

(HBPBSJB)
HOIST BLOCK PUSH BUTTON STATION JN.BOX

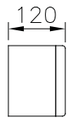
22TBC
CONTROL TERMINAL STRIP

SPARE	754	752	757	758	761	750	SPARE	871A	872A	873A	875A	876A	SPARE	971A	972A	973A	975A	976A	SPARE	130	131	132	SPARE
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24

1
NOTES:–
1) ALL DIMENSIONS ARE IN MM.
2) DEGREE OF PROTECTION : IP42
3) COLOR SHADE – RAL 631(LIGHT GRAY)



FRONT VIEW

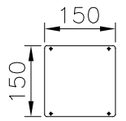


SIDE VIEW

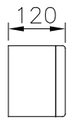
18TBC
CONTROL TERMINAL STRIP

SPARE	57B	68	SPARE
1	2	3	4

UNDER BRIDGE LIGHTS
JN. BOX–1 (UBLJB1)
(ON BRIDGE)



FRONT VIEW

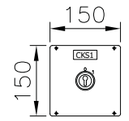


SIDE VIEW

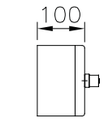
19TBC
CONTROL TERMINAL STRIP

SPARE	57B	69	SPARE
1	2	3	4

UNDER BRIDGE LIGHTS
JN. BOX–2 (UBLJB2)
(ON BRIDGE)



FRONT VIEW



SIDE VIEW

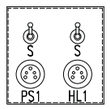


TOP VIEW

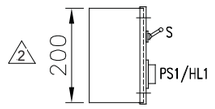
29TBC
CONTROL TERMINAL STRIP

SPARE	148	149	SPARE
1	2	3	4

1
CONTROL KEY SWITCH
JN.BOX–CKSJB
(ON CABIN PLATFORM)



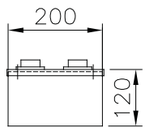
FRONT VIEW



SIDE VIEW

FRONT VIEW

SIDE VIEW

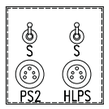


BOTTOM VIEW

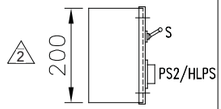
30TBC
CONTROL TERMINAL STRIP

SPARE	55	57B	56	57D	SPARE
1	2	3	4	5	6

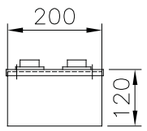
1
POWER & HAND LAMP SOCKET
PS1 & HL1 IN 'DGJB–1'
(DRIVE GIRDER JN.BOX–1)



FRONT VIEW



SIDE VIEW

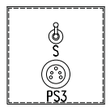


BOTTOM VIEW

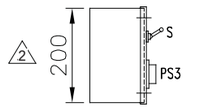
16TBC
CONTROL TERMINAL STRIP

SPARE	55	57B	SPARE
1	2	3	4

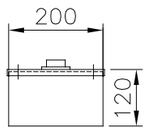
1
POWER & HAND LAMP
POWER SOCKET
PS2 & HLPS IN 'DGJB–2'
(DRIVE GIRDER JN.BO–2)



FRONT VIEW



SIDE VIEW

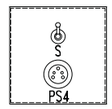


BOTTOM VIEW

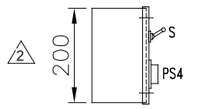
17TBC
CONTROL TERMINAL STRIP

SPARE	55	57B	SPARE
1	2	3	4

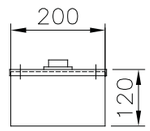
1
POWER SOCKET
PS3 IN 'IGJB–1'
(IDLE GIRDER JN.BOX–1)



FRONT VIEW



SIDE VIEW

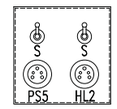


BOTTOM VIEW

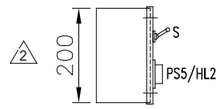
31TBC
CONTROL TERMINAL STRIP

SPARE	55	57B	SPARE
1	2	3	4

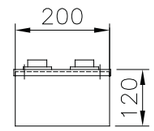
1
POWER SOCKET
PS4 IN 'IGJB–2'
(IDLE GIRDER JN.BOX–2)



FRONT VIEW



SIDE VIEW

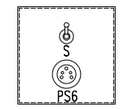


BOTTOM VIEW

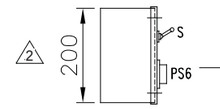
28TBC
CONTROL TERMINAL STRIP

SPARE	55	57B	56	57D	SPARE
1	2	3	4	5	6

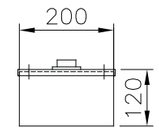
1
POWER & HAND LAMP SOCKET
PS5 & HL2 IN 'CJB–1'
(CABIN JN.BOX–1)



FRONT VIEW



SIDE VIEW



BOTTOM VIEW

32TBC
CONTROL TERMINAL STRIP

SPARE	55	57B	SPARE
1	2	3	4

1
POWER SOCKET
PS6 IN 'CJB–2'
(CABIN JN.BOX–2)

Issue	Remarks	Name	Date
2	REVISED AS NOTED	DP	29.11.2019
1	REVISED AS NOTED	DP	07.09.2019

Prep.	DINESH
Ckd.	ABHAY
APPR.	SMG
ALL DIMENSIONS ARE IN MM.	

CLIENT BHEL

BHARAT HEAVY ELECTRICAL LTD
POWER SECTOR
PROJECT ENGINEERING MANAGEMENT
NEW DELHI

BHEL DRG NO. : PE–V0–437–501–A518 1

FAFECO

DESCRIPTION: 250–50–10T x 21M POWER HOUSE CRANE (CRANE–1&2)

TITLE : GA of HBPBS, UBLJB1, UBLJB2, DGJB, IGJB, CJB, CPJB jn.box

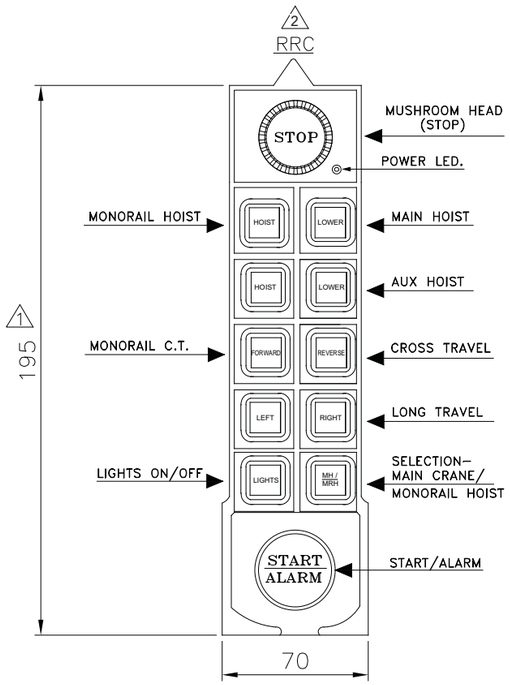
FURNACE & FOUNDRY EQUIPMENT CO.
CHANDIVALI FARM MUMBAI – 72

FAFECO DRG NO.: OG–06/250–50–10Tx21M/211

Sheet 14 / 17

THIS IS PART OF TECHNICAL SPECIFICATION PE-TS-437-501-A001A REV 0

A3.dwg

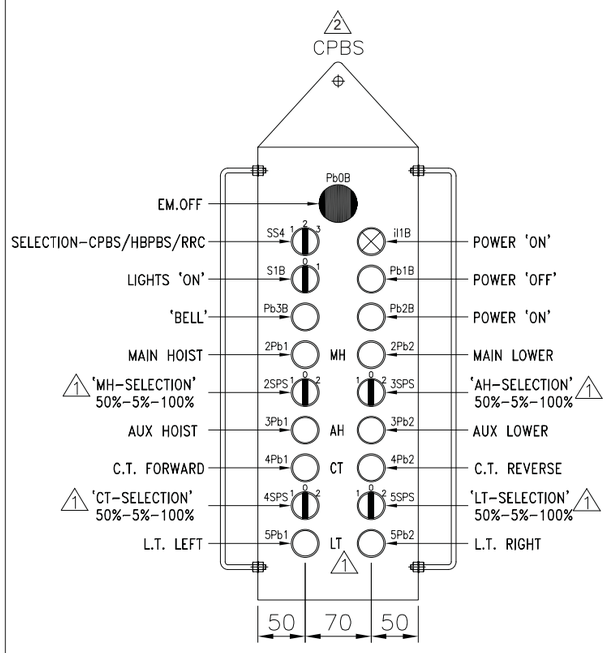


RADIO REMOTE CONTROL (RRC)

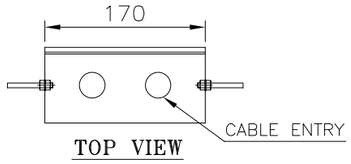
2 BATTERY VOLTAGE–3V.DC

ALL PUSH BUTTONS ARE DOUBLE STEPS.
MAKE:– SNT CONTROLES (MUMBAI)

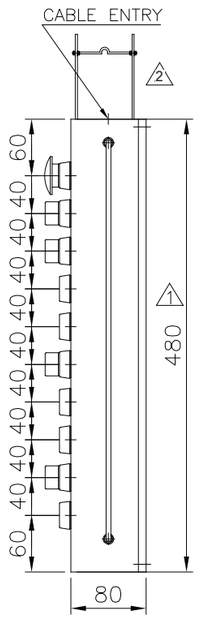
1
NOTES:– 2
1) ALL DIMENSIONS ARE IN MM.
2) DEGREE OF PROTECTION : IP65
3) AMBIENT TEMP : –20° TO +70°
4) APPROX. WEIGHT – 200 GRAMS



FRONT VIEW



TOP VIEW

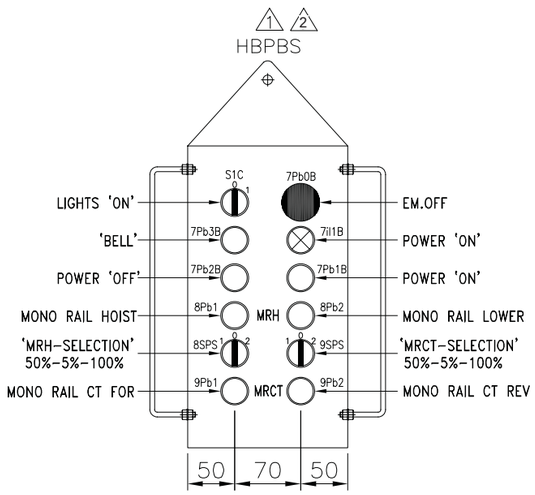


SIDE VIEW

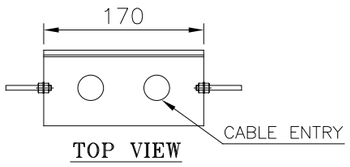
CRANE PUSH BUTTON STATION (CPBS)

2 AC–110V, 50Hz

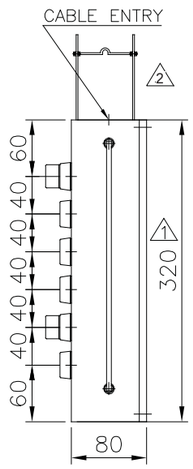
1
NOTES:–
1) ALL DIMENSIONS ARE IN MM.
2) DEGREE OF PROTECTION : IP55
3) AMBIENT TEMP : 40°
4) PENDANT SHALL BE MULTICORE EPR FLEXIBLE
5) PVC COATED STEEL WIRE ROPE FOR PENDANT SHALL BE 2mm.
6) APPROX. WEIGHT – 5Kg
2 7) STEEL CHAIN/STEEL ROPE/NYLONE ROPE OF 4mm dia x 20Mtrs. LENGTH SHALL TAKE THE PENDANT LOAD & CONNECTING CABEL C113,C114 DETAILS ARE GIVEN IN CABLE SCHEDULE.



FRONT VIEW



TOP VIEW



SIDE VIEW

MONO RAIL HOIST BLOCK PUSH BUTTON STATION (MRHPBS)

2 AC–110V, 50Hz

1
NOTES:–
1) ALL DIMENSIONS ARE IN MM.
2) DEGREE OF PROTECTION : IP55
3) AMBIENT TEMP : 40°
4) PENDANT SHALL BE MULTICORE EPR FLEXIBLE
5) PVC COATED STEEL WIRE ROPE FOR PENDANT SHALL BE 2mm.
6) APPROX. WEIGHT – 3Kg
2 7) STEEL CHAIN/STEEL ROPE/NYLONE ROPE OF 4mm dia x 20Mtrs. LENGTH SHALL TAKE THE PENDANT LOAD & CONNECTING CABEL DETAILS C136 IS GIVEN IN CABLE SCHEDULE.

THIS IS PART OF TECHNICAL SPECIFICATION PE-TS-437-501-A001A REV 0

Issue	Remarks	Name	Date
2	REVISED AS NOTED	DP	29.11.2019
1	REVISED AS NOTED	DP	07.09.2019

Prep. DINESH | Ckd. ABHAY | APPR. SMG | ALL DIMENSIONS ARE IN MM.

CLIENT: BHARAT HEAVY ELECTRICAL LTD
POWER SECTOR
PROJECT ENGINEERING MANAGEMENT
NEW DELHI

BHEL DRG NO. : PE–V0–437–501–A518 1

FAFECO

DESCRIPTION: 250–50–10T x 21M POWER HOUSE CRANE (CRANE–1&2)

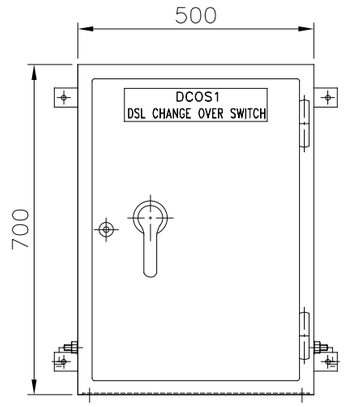
TITLE : GA of Radio Remote Control, Crane Push button station & Hoist block Push button station

FURNACE & FOUNDRY EQUIPMENT CO.
CHANDIVALI FARM MUMBAI – 72

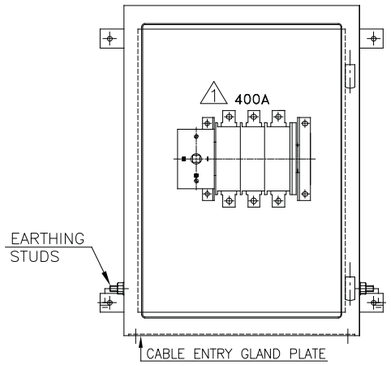
FAFECO DRG NO.: OG–06/250–50–10Tx21M/211

Sheet 15 / 17

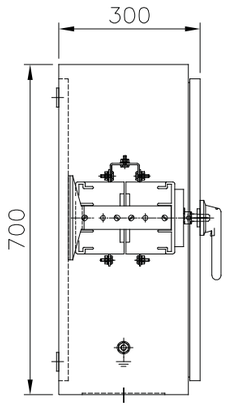
A3.dwg



PANEL VIEW WITH DOOR



PANEL VIEW WITHOUT DOOR

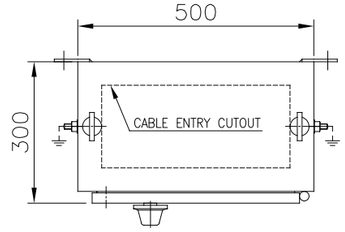


SIDE VIEW

1 2 3 INCOMMING CABLES
SOURCE–1=1RUN, 3C x 70 Sq.mm XLPE CU.ARM.
LENGTH–150M

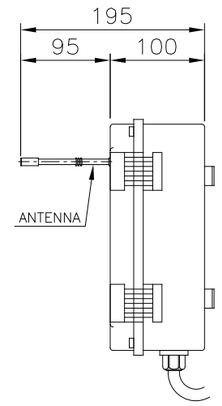
OUTGOING CABLES
1RUN, 3C x 70 Sq.mm XLPE CU.ARM.
1RUN, 1C x 35 Sq.mm XLPE CU.ARM.

DSL CHANGE OVER SWITCH (DCOS1)

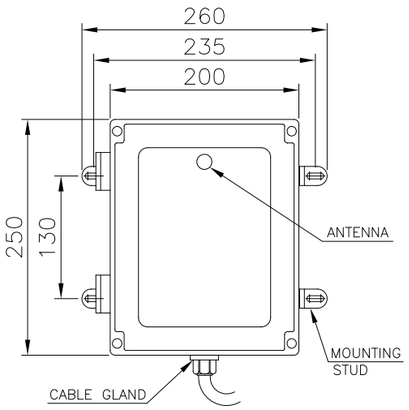


TOP VIEW

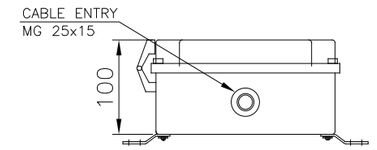
NOTES:–
1) ALL DIMENSIONS ARE IN MM.
2) DEGREE OF PROTECTION : IP54
3) ENCLOSURE – 2MM CRCA SHEET
4) DOOR – HINGED TYPE
5) LOCATION – AT FLOOR LEVEL
6) APPROX. WEIGHT – 50Kg



SIDE VIEW



FRONT VIEW



TOP VIEW

RADIO REMOTE PANEL (RRP)

THIS IS PART OF TECHNICAL SPECIFICATION PE-TS-437-501-A001A REV 0

Issue	Remarks	Name	Date		
2	REVISED AS NOTED	DP	30.09.2019	Ckd.	ABHAY
1	REVISED AS NOTED	DP	07.09.2019	APPR.	SMG

ALL DIMENSIONS ARE IN MM.

CLIENT: BHARAT HEAVY ELECTRICAL LTD
POWER SECTOR
PROJECT ENGINEERING MANAGEMENT
NEW DELHI

BHEL DRG NO. : PE–V0–437–501–A518 /1

FAFECO

DESCRIPTION: 250–50–10T x 21M POWER HOUSE CRANE (CRANE–1&2)

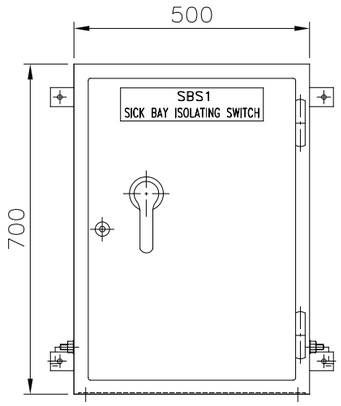
TITLE : GA of DSL Change over switch & Radio Remote Panel

FURNACE & FOUNDRY EQUIPMENT CO.
CHANDIVALI FARM MUMBAI – 72

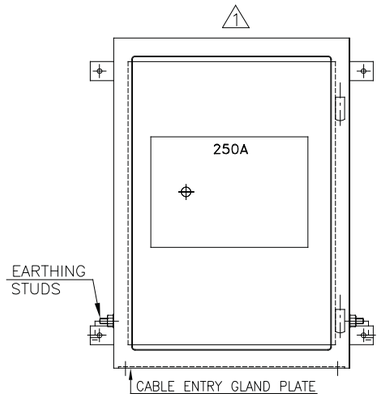
FAFECO DRG NO.: OG–06/250–50–10Tx21M/211

Sheet 16 / 17

A3.dwg



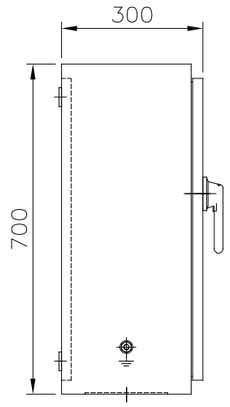
PANEL VIEW WITH DOOR



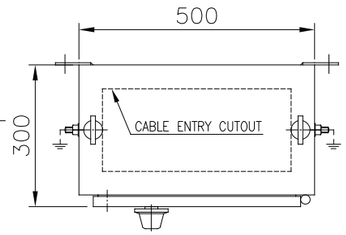
PANEL VIEW WITHOUT DOOR

1 2 INCOMMING CABLES
1R x 3C x 35 Sq.mm XLPE Cu.ARM.

3 OUTGOING CABLES
1R x 3C x 35 Sq.mm XLPE Cu.ARM.



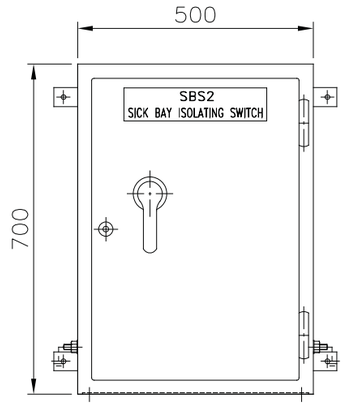
SIDE VIEW



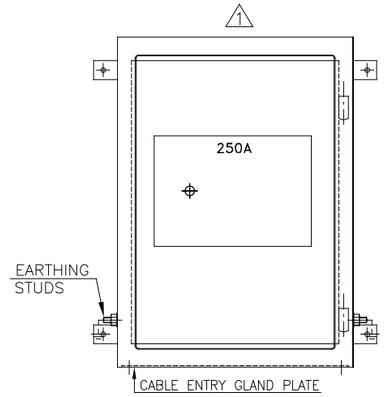
TOP VIEW

SICK BAY
ISOLATING SWITCH-1
(SBS1)

NOTES:-
1) ALL DIMENSIONS ARE IN MM.
2) DEGREE OF PROTECTION : IP54
3) ENCLOSURE - 2MM CRCA SHEET
4) DOOR - HINGED TYPE
5) LOCATION - AT ONE END OF DSL ON GANTRY
6) APPROX. WEIGHT - 40Kg



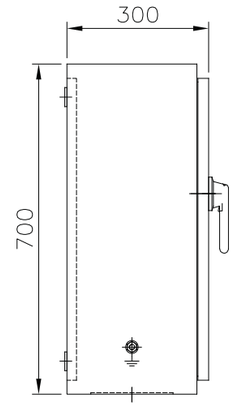
PANEL VIEW WITH DOOR



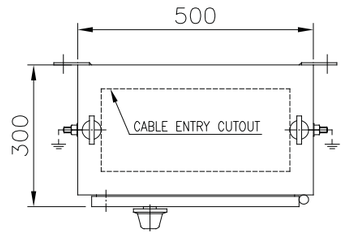
PANEL VIEW WITHOUT DOOR

1 2 INCOMMING CABLES
1R x 3C x 35 Sq.mm XLPE Cu.ARM.

3 OUTGOING CABLES
1R x 3C x 35 Sq.mm XLPE Cu.ARM.



SIDE VIEW



TOP VIEW

SICK BAY
ISOLATING SWITCH-2
(SBS2)

NOTES:-
1) ALL DIMENSIONS ARE IN MM.
2) DEGREE OF PROTECTION : IP54
3) ENCLOSURE - 2MM CRCA SHEET
4) DOOR - HINGED TYPE
5) LOCATION - AT OTHER END OF DSL ON GANTRY
6) APPROX. WEIGHT - 40Kg

Issue	Remarks	Name	Date	ALL DIMENSIONS ARE IN MM.
2	REVISED AS NOTED	DP	30.09.2019	Ckd. ABHAY
1	REVISED AS NOTED	DP	07.09.2019	APPR. SMG

CLIENT BHARAT HEAVY ELECTRICAL LTD
POWER SECTOR
PROJECT ENGINEERING MANAGEMENT
NEW DELHI

BHEL DRG NO. : PE-V0-437-501-A518 1

FAFECO

DESCRIPTION: 250-50-10T x 21M POWER HOUSE CRANE (CRANE-1&2)

TITLE : GA of Sick Bay Isolating switch panel

FURNACE & FOUNDRY EQUIPMENT CO.
CHANDIVALI FARM MUMBAI - 72

FAFECO DRG NO.: OG-06/250-50-10Tx21M/211

Sheet 17 / 17

THIS IS PART OF TECHNICAL SPECIFICATION PE-TS-437-501-A001A REV 0

A3.dwg

Cable Sizing and cable schedule For 250/50/10T Power House Crane
for 250-50-10Tx21M Power House Crane.

(VENDOR : M/S. FAFECO)

SJVN Arun-3Power Development Company (P.) Ltd.
(A company promoted by SJVN Limited, joint venture of Govt. of India and Govt. of H.P)
Regd. No.: 111808/69/070

Approved by Consultant	To be Issued to Contractor		
	Category: APPROVAL		
☑Yes ☐No	Reviewed	Recommended	Approved

Consultant:- SJVN LTD.

Recommended for Approval

SUB GROUP		SECTIONAL HEAD	HOD
Checked	Reviewed		

Total Pages 48

CUSTOMER	SJVN ARUN-3 POWER DEVELOPMENT COMPANY Pvt. LTD. (SAPDC)
CONSULTANT	SJVN LTD.
PROJECT	ARUN-3 HYDRO ELECTRIC PROJECT (NEPAL) (4X225MW)

BHARAT HEAVY ELECTRICALS LTD
POWER SECTOR
PROJECT ENGINEERING MANAGEMENT
NEW DELHI

DEPT CODE

	NAME	SIGN	DATE
DRN	DP		27.08.19
DESN	DP		27.08.19
CHD	SM		27.08.19
APPD	SM		27.08.19

FAFECO FURNACE & FOUNDRY EQUIPMENT CO.
CHANDIVALI FARM MUMBAI – 72

FAFECO Drawing no.
OG-06/250-50-10Tx21M/212

JOB NO. 437

STATUS CONTRACT

DISTRIBUTION

TITLE: Cable Sizing and cable schedule For 250/50/10T Power House Crane

REV.	DATE	ALTD	CHD	APPD
0	27.08.19	DP	SM	SM
1	06.12.19	DP	SM	SM

REV.	DATE	ALTD	CHD	APPD

DEPT. SCALE - 1:1
SIGN
DATE

DRAWING NO
PE-V0-437-501-A519

SHEET - 1 OF 1 REV. 1

A3.dwg

THIS IS PART OF TECHNICAL SPECIFICATION PE-TS-437-501-A001A REV 0

	Cable Selection calculation -			OG06A1A2	250/50T+HB 10TX21M			Rev:1 dated 04-12-19
	All Motors are 40% CDF-300 Starts for M5 Duty Crane as per IS 3177-1999.								
	Fixed Cables: XLPE-FRLS-Armoured-Copper								
	Flex Cables: EPR insulated-Flexible Rubber-Copper-CSP Sheathed								
		Motion Loading Details					**Crane Details**		
A	**B**	**C**	**D**	**E**	**F**	**G**	**H**	**I**	**J**
7	Motion	Motion-Load-KW	Motor Frame			Motion Loading	Details	Value	Formulae
8	Code	KW	KW	Qty	Amps	Amps	Amb. °C	40	
9	PPA	x	x	0	0	13.40			I48
10	MHA	52.70	58.90	1	105	98.69			1.02*(C10/D10*F10)+2*(1+0.43)
11	AHA	48.70	55.00	1	98	91.37			1.02*(C11/D11*F11)+2*(1+0.43)
12	CTA	6.40	4.00	2	10.1	18.38			1.02*(C12/(E12*D12))*E12*F12+2*(0.6+0.35)
13	LTA	22.40	6.50	4	15.2	58.83			1.02*(C13/(E13*D13))*E13*F13+4*(1+0.35)
14	HB10T-MH	5.70	6.50	1	15.2	14.40			1.02*(C14/D14*F14)+1*0.8
15	HB10T-CT	0.25	0.55	1	1.61	1.25			1.02*(C15/D15*F15)+1*0.5
15A	Lighting-Secondry	5.50				24.00	at 230V-Secondry		
16	Main					170.92			G9+G10+G13
17	**Factors considered for cable selection are based on universal manufacturer's catalogue and CDF factor is based on relevant IS**								
18	Code	Factor	Detail				Cable	Motion	Remarks
19	C1a	1	Amb. Temp. fact for Fixed Cables				Fixed	All cables	For Main and All motions,Table-51
20	C1b	1	Amb. Temp. fact for Flex Cables.				Flexi		EPR Rubber-Table-51
21	C2a	0.84	Grouping Factor- 2 cables-Fixed Cables				Fixed	Main	Laid for Main Power cable/ 2 motions,Table-59C
22	C2b	0.9	Grouping Factor-2 cables-Flex Cables				Flexi	All Motions	EPR Rubber-Table-59C
23	Table	1.70	CDF Uprating Factor				All	All Motions	M5 Duty-IS 3177-P 31
24	**Power Cables Selected-Fixed-> Copper Conductor XLPE Insulated Armoured Cables (Table 32), DSL-Alum cable (Table 32)**								
25	**Power Cables Selected-Flexible-> Copper EPR Insulated Flexible Rubber Cables-Table 45**								
26	**Power Cable Selection:**								
27	Motion	Reqd	Cable	Cable	Cable	Remarks			T
28		Amps	Amps	Route	Size-mm^2				
29	Main	119.7	151	Fixed	35	Reqd=Main/(C1axC2axC3)			G16/(C19*C21*C23)
30	MH	69.1	90	Fixed	16	Reqd=MHA/(C1axC2axC3)			G10/(C19*C21*C23)
31		64.5	93	Flexi	16	Reqd=MHA/(C1bxC2bxC3)			G10/(C20*C22*C23)
32	AH	64.0	90	Fixed	16	Reqd=AHA/(C1axC2axC3)			G11/(C19*C21*C23)
33		59.7	93	Flexi	16	Reqd=AHA/(C1bxC2bxC3)			G11/(C20*C22*C23)
34	CT	12.9	30	Fixed	2.5	Reqd=CTA/(C1axC2axC3			G12/(C19*C21*C23)
35		12.0	28	Flexi	2.5	Reqd=CTA/(C1bxC2bxC3)			G12/(C20*C22*C23)
36	LT-4 Motors-Grp	41.2	51	Fixed	6	Reqd=LTA/(C1axC2axC3)			(G13/(C19*C21*C23))
37	LT-Per Motor	10.3	30	Fixed	2.5	Reqd=LTA/(C1xC2bxC3xmotor qty)			C36/E13
38	HB10T-MH	10.1	30	Fixed	2.5	Reqd=Main/(C1axC2axC3)			G14/(C19*C21*C23)
39		9.4	28	Flexi	2.5	Reqd=MHA/(C1bxC2bxC3)			G14/(C20*C22*C23)
40	HB10T-CT	0.9	30	Fixed	2.5	Reqd=Main/(C1axC2axC3)			G15/(C19*C21*C23)
41		0.8	28	Flexi	2.5	Reqd=MHA/(C1bxC2bxC3)			G15/(C20*C22*C23)
	Lighting-Secondry	28.6	40	Fixed	4	Reqd=Lighting (G15A/C2a)			at 230V secondry
42	DSL-Feed-Cable-Cu-XLPE-Arm	201.1	231	Fixed	70	Reqd=load of 2 cranes.			C29*2*C21
43	**Control cables**				Multi core 1.5 sqmm copper conductor cables selected				
44	**Instrumentation cables**				Multi core 0.5 sqmm copper conductor cable selected due to termination acceptablity				
45	**Brake Cables:**				Multi core 2.5 sqmm copper conductor cables selected				
46	Protective Panel Light Load on Primary Side-Amps-Refer Transformer Tab							10.80	
47	Control Transformer Load on Primary Side-Amps-Refer Transformer Tab							2.60	
48	Combined Lighting and Control Circuit Load-Amps							13.40	

THIS IS PART OF TECHNICAL SPECIFICATION PE-TS-437-501-A001A REV 0

PROJECT: 4X225 MW ARUN III HEP, NEPAL
PACKAGE: 2X250/50/10T POWER HOUSE DOUBLE GIRDER EOT CRANE
DOCUMENT: Cable Sizing and cable schedule For 250/50/10T Power House Crane
DOCUMENT NO; PE-V0-437-501-A519, Rev 1

VFD+Switchgear	**OG06A1A2**	**250/50T+HB 10TX21M**				
Design ambient Temp in oC	**40**					
Details	MH	AH	CT	LT	HB10T-MH	HB10T-CT
Motion-Loading KW	52.70	48.70	6.40	22.40	5.70	0.25
Motion-Loading A	98.69	91.37	18.38	58.83	14.40	1.25
Motor Fr. KW	58.90	55.00	4.00	6.5	6.50	0.55
Motor Fr. A	105	98	10.1	15.2	15.2	1.61
Motor-Qty	1	1	2	4	1	1
VFD Make	Schneider-DBR	Schneider-DBR	Schneider-DBR	Schneider-DBR	Schneider-DBR	Schneider-DBR
VFD Model	ATV71HD75N4	ATV71HD55N4	ATV71HD11N4	ATV71HD30N4	ATV71HU75N4	ATV 71H075N4
Encoder Card	VW3A3401	VW3A3401	VW3A3401	VW3A3401	VW3A3401	VW3A3401
VFD Dimensions-WXHXD-mm	320WX290DX625H	320WX290DX625H	210WX213DX300H	240WX266DX550H	175WX187DX300H	155WX187DX260H
VFD KW	75	55	11	30	7.5	0.75
VFD Amps	160	116	27.7	66	17.6	2.3
VFD-cat--DBR -KW	37.5	27.5	5.5	15	3.8	0.37
VFD-Cat-DBR -Ohms	4.2	8.1	24.5	14	24.5	100
Line Choke-mH	0.155	0.3	1	0.3	2	10
Line ChokeAmps	184	100	31	100	17	4
MPCB/MCCB Amps	250	160	40	80	32	4
Type	MCCB	MCCB	MCCB	MCCB	MCB	MCB
Mech. Loading-DBR-Amps	117.48	81.32	16.95	41.95	16.00	1.66
Rounded-DBR-Amps	118.00	82.00	17.00	42.00	16.00	2.00
Rounded-DBR-KW	58.48	54.46	7.08	24.70	6.27	0.40

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Control Transformer Sizing			OG06A1/ 250/50T+HB 10TX21M				Total Max. Load	
Sr.	Item	Load	Select	Type	Pick VA	Seal-VA	Qty	VA
		Amps	Amps	Siemens				
1	Main Contactor	170.92	205	3TF	910	58	1	910
	Lighting Contactor	10.80	12	3TF	68	10	1	10
2	MH Control	Brake	16	3TF	68	10	1	10
		Aux	10	3TH	68	10	4	40
3	AH Control	Brake	16	3TF	68	10	1	
		Aux	10	3TH	68	10	4	
4	CT Control	Brake	16	3TF	68	10	1	
		Aux	10	3TH	68	10	4	
5	LT Control	Brake	16	3TF	68	10	1	68
		Aux	10	3TH	68	10	4	40
Note: Hoist Block not considered as crane load is maximum and either crane or HB shall operate.								
						Total	18	1078
				Prim-Volt	415	Primary Load Amps		2.60
				Transformer Selection Margin			1.3	1401.40
	Selected Transformer		1500	VA				
Lighting Transformer								
Sr.	Desc	Qty	Unit	Total	Amps	Amps	SEC	Prim
			Watt	Watt	230V	415V	Volts	Volts
1	Panel Lights	8	3	24	0.10	0.06	230	415
2	UB Lights	4	1000	4000	17.39	9.64	230	415
3	Bridge Light	4	40	160	0.70	0.39	230	415
4	Cabin-lights-Fan	3	100	300	1.30	0.72	230	415
5	Cabin Sockets-24V	1	40	40	1.67	0.10	24	415
6	Cabin Sockets-230V	1	100	100	0.43	0.24	230	415
7	Platform Sockets-24V	1	40	40	1.67	0.10	24	415
8	Platform Sockets-230V	4	60	240	1.04	0.58	230	415
9	Space Heaters of MH+AH motors+++	10	50	500	2.17	1.20	230	415
10	Total	36		5404	26.48	13.02	1	1
12	Transf. Designed	Margin	1.2	6484.80				
13	Crane Run Load					10.80		
	Selected Transformer-VA			6500				

THIS IS PART OF TECHNICAL SPECIFICATION PE-TS-437-501-A001A REV 0

Job No:	OG06A1A2	Code
Crane:	250/50T+HB 10TX21M	
Design ambient temperature in oC	40	Input
Loading on DSL of 2 Cr	201.08	Refer Cable sizing
Margin as per BHEL spec P230	1.20	
Loading on DSL of 2 Cr with margin	241.30	loading+margin
Motors-CDF	40%	Input
Motors-St/Hr	300	Input
DSL Type	Shrouded Copper Conductor.	Input
DSL Model	WC-400	Catalogue
DSL Amps Cont.	400	Catalogue
DSL Amps at CDF	632	Catalogue
DSL Impedance at +35oC-ohms/Mtr	0.000221	Catalogue
Impedance temp in oC	35	Catalogue
Temperature Coefficient of the copper per oC	0.00429	TC(Internet)
DSL Impedance at Ambient oC-ohms/Mtr	0.00022574	
Bay Length-Mtrs	157.675	
Width of both similar cranes(each crane=11 mtrs)	22	
Crane Travel-Mtrs with hosp. bay	135.675	
Hospital Bay of 20 Mtrs at each end -not considered	0	
Crane Travel-Mtrs	135.675	
DSL Feed Point	Centre	
DSL Effective Length-Mtrs	67.84	
Feed Cable Selected-3.5C-XLPE Copper-sqmm	70	
Amps capcity of the feed cable-continous	231	

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Design ambient temperature in oC	40	Input		
Voltage Drop in DSL Conductor				
Voltage Drop Calc. from Feed point to Main Panel	OG06A1A2 250/50T+HB 10TX21M			
Description	Value	Code	Ref.	
Voltage of the 3 phase busbar in volts	415	VS	Input	
Loading of the Equipment in Amps without margin for VD	201.08	IA	Input-Calc	
Crane moving Distance in Bay in Mtrs	135.675	BL	Input-GA	
Condsidering Centre Feed, Factor shall be	2	FD	Catalogue	
Considering Centre Feed, Effective Length in Mtrs	67.84	LEF=BL/FD		
Selected Busbar Safe Duct C current at 100% CDF in Amps	400	BA	DSL-Sel	
Selected Busbar Safe Duct C current at 40% CDF in Amps	632	BCD	DSL-Sel	
Impedance of the sel. Busbar at +35oC in ohms/M	0.000221	Z35	DSL-Sel	
Impedance of the sel. Busbar at Design Amb. oC in ohms/M	0.000226	Zam	DSL-Sel	
Absolute Voltage drop in DSL Busbar	5.33	VDB=sqrt(3)*LEF*Zam*IA		
Voltage Drop in Cables-1				
Copper Cable Size Selected from Gr. Feed to Gantry-DSL Feed -sqmm	70	SZ	Input	
Cable Distance From Gr. Feed Point to DSL Feed point in Mtrs	11	LC1	Input	
Cable Distance From BHEL Panel to Change over switch under DSL in Mtrs	150	LC2	Input	
Total Cable length of the Crane feed	161.00	LC	LC1+LC2	
Specific Resistance of copper in ohm-mtr at 20 oC (x10-8)	1.724	R2	Internet	
Temperature of the conductor for above resistance	20	T2	Internet	
Temperature Coefficient of the Copper per oC	0.00429	TC	Internet	
Resist. of copper at Deign Temperature in ohm-mtr (x10-8)	1.8719	Ramb=R2+R2*TC*(TD-T2)		
Resistance of selected cable (R=l/A,R in ohms, length in mtrs, Cable cond. Area in sq mtrs)in ohms/km	0.27	ROK=Ramb*1000/(SZ/1000000)		
Reactance of the selected copper cable at 50 Hz-ohms/KM	0.0740	EX	Cat-Table 63	
Cos (Theta)	0.8	Cos	Input	
Sin (Theta)	0.6	Sin	Input	
Impedance of the conductor of cable in ohms/km	0.26	Z=ROK*Cos+EX x Sin		
Voltage Drop of the sel. Cable in Volts	14.49	VDC=sqrt(3)X Z x LC X IA/1000		
Voltage Drop in Cables-2				
Copper Cable Size Selected from DSL Current Collector to Protective Panel -sqmm	35	SZ	Input	
Cable Distance From DSL Current Collector to Protective Panel in Mtrs	5	LC1	Input	
Total Cable length of the Crane feed	5.00	LC	LC1	
Specific Resistance of copper in ohm-mtr at 20 oC (x10-8)	1.724	R2	Internet	
Temperature of the conductor for above resistance	20	T2	Internet	
Temperature Coefficient of the copper per oC	0.00429	TC	Internet	
Resist. of copper at Deign Temperature in ohm-mtr (x10-8)	1.5761	Ramb=R2+R2*TC*(T		
Resistance of selected cable (R=l/A,R in ohms, length in mtrs, Cable cond. Area in sq mtrs)in ohms/km	0.45	ROK=Ramb*1000/(SZ/1000000)		
Reactance of the selected copper cable at 50 Hz-ohms/KM	0.0805	EX	Cat-Table	
Cos (Theta)	0.8	Cos	Input	

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Sin (Theta)	0.6	Sin	Input	
Impedance of the conductor of cable in ohms/km	0.41	Z=ROK*Cos+EX x Sin		
Voltage Drop of the sel. Cable in Volts	0.07	VDC=sqrt(3)X Z x LC X IA/1000		
Voltage Drop of DSL Bus and Cables at Protective Panel				
Voltage Drop of DSL Busbar and Cable in Volts	19.89	VD=VDB+ VDC+VDC		
Voltage drop in percentage	4.79	VDP=VD/VS*100		
Check Status for 5% or less	OK			

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CABLE SCHEDULE FOR 2X250T/50/10T DOUBLE GIRDER POEWR HOUSE CRANE

THIS IS PART OF TECHNICAL SPECIFICATION PE-TS-437-501-A001A REV 0

Job: OG - 06		**Customer: BHARAT HEAVY ELECTRICAL LTD**																
Crane: OG-06/250-50-10Tx21M SPAN POWER HOUSE CRANE (CRANE-1 & CRANE-2)						**Ref Drg No.Electrical Layout**					**Prepd. by: RA**		**Rev. No.**	**1**				
TITLE : Cable Schedule						**CONTRACTOR :**					**Ref-FAFECO Drg. N**		**OG-06/250-50-10Tx21M/201**					
FAFECO DRG NO. OG-06/250-50-10Tx21M/212						**Checked by : AGG**					**Ref-BHEL Drg. No.**		**PE-V0-437-501 -A51 7**					
code CXLPE= XLPE Insulated Armoured stranded copper conductor cable 1.1 KV Grade as per IS 7098-Part1-1988																		
code AXLPE= XLPE Insulated Armoured stranded Aluminium conductor cable 1.1 KV Grade as per IS 7098-Part1-1988																		
Code CEPRF= EPR Insulated PCP Rubber stranded conductor cable 1.1 KV Grade as per IS 9968																		
Code RS-485 = Local networks and multidrop communications links																		
Code CXLPS= XLPE/PVC insulated unarmoured shielded Copper Conductor cable.																		
Code Eth=Ethernet Cable																		
Designation: Prefix for Power cable "P", Control Cable "C", Instrumentation cable "IC", Earthing cable "E" are incorporated																		
Abbrevition: SHT=Reference Sheet No. of schematic drg., FRL=Ferrule, CR1=applicable for Crane 1 only, CR2=Applicable for Crane 2 only, CR12=Applicable for Crane 1 as well as Crane 2, CRC= Common for both Cranes																		
CTF=Cross Travel Festoon, MRHF=Monorail Hoist Festoon, CPBSF=Crane Push Button Station Festoon, HPBSF=Hoist Block Push Button Station Festoon, E-CABLE= Encoder Cable																		
CABLE	**LE DETAILS**		**FROM**				**TO**				**CABLE**	**NO OF**	**RUN**	**REQD**	**Proj-Qty**	**Qty-A/C**	**REMARK**	
NO	**CORES**	**SIZE**	**FROM EQUIPMENT**	**T.B.**	**FRL**	**SHT**	**TO EQUIPMENT**	**T.B.**	**FRL**	**SHT**	**CODE**	**CABLES**	**LENGTH**	**LENGTH**	**2**			
	NO.	**SQ MM**		**GROUP NO**	**NO**	**Nos**		**GROUP NO**	**NO**	**Nos**		**RUN**	**IN MTR**	**IN MTR**	**cranes**			
						65				**65**								
POWER CABLES:																		
P1	3C	70	BHEL INCOMING	R	R1	3	DCOS1-DSL	DCOS1	R1	3	CXLPE	1	150	150	150	CRC		
			FEEDER	Y	Y1		CHANGE OVER	-7	Y1									
				B	B1		SWITCH (AT G. L) -IN	-9	B1									
P2	3C	70	DCOS1-DSL	DCOS1 -1	R	3	D.S.L. CON- DSL	DSL	R	3	CXLPE	1	35	35	35	CRC		
			CHANGE OVER	-2	Y		CONDUCTORS	-Y	Y									
			SWITCH (AT G. L) -OUT	-3	B			-B	B									
P3	3C	35	D.S.L. CON- DSL	DSL -R	R	3	SBS1- SICK SBS1	SBS1	R	3	CXLPE	1	14	14	14	CRC		
			CONDUCTORS	-Y	Y		BAY SWITCH1	-3	Y									
				-B	B			-5	B									
P4	3C	35	D.S.L. CON- DSL	DSL -R	R	3	SBS1- SICK SBS1	SBS1	R	3	CXLPE	1	14	14	14	CRC		
			CONDUCTORS	-Y	Y		BAY SWITCH1	-4	Y									
				-B	B			-6	B									
P5	4C	2.5	D.S.L. CON- DSL	DSL -R	R	3	DIL1- DSL INDICATING	DIL1	R	3	CXLPE	1	5	5	5	CRC		
			CONDUCTORS	-Y	Y		LIGHTS (R.Y.B) (ONE	-X1	Y									
				-B	B		END OF SBS1)	-X1	B									
				-E	E			-X2	E									
P6	4C	2.5	D.S.L. CON- DSL	DSL -R	R	3	DIL2- DSL INDICATING	DIL2	R	3	CXLPE	1	5	5	5	CRC		
			CONDUCTORS	-Y	Y		LIGHTS (R.Y.B) (OTHER	-X1	Y									
				-B	B		END OF SBS1)	-X1	B									
				-E	E			-X2	E									
P7	3C	35	D.S.L. CON- DSL	DSL -R	R	3	SBS2- SICK SBS2	SBS 2	R	3	CXLPE	1	14	14	14	CRC		
			CONDUCTORS	-Y	Y		BAY SWITCH2	-3	Y									
				-B	B			-5	B									
P8	3C	35	D.S.L. CON- DSL	DSL -R	R	3	SBS2- SICK SBS2	SBS 2	R	3	CXLPE	1	14	14	14	CRC		
			CONDUCTORS	-Y	Y		BAY SWITCH2	-4	Y									
				-B	B			-6	B									
							PAGE 1 OF 40											

THIS IS PART OF TECHNICAL SPECIFICATION PE-TS-437-501-A001A REV 0

Job: OG - 06		**Customer: BHARAT HEAVY ELECTRICAL LTD**																
Crane: OG-06/250-50-10Tx21M SPAN POWER HOUSE CRANE (CRANE-1 & CRANE-2)							**Ref Drg No.Electrical Layout**					**Prepd. by: RA**		**Rev. No.**	**1**			
TITLE : Cable Schedule							**CONTRACTOR :**					**Ref-FAFECO Drg. N**		**OG-06/250-50-10Tx21M/201**				
FAFECO DRG NO. OG-06/250-50-10Tx21M/212							**Checked by : AGG**					**Ref-BHEL Drg. No.**		**PE-V0-437-501 -A51 7**				
code CXLPE= XLPE Insulated Armoured stranded copper conductor cable 1.1 KV Grade as per IS 7098-Part1-1988																		
code AXLPE= XLPE Insulated Armoured stranded Aluminium conductor cable 1.1 KV Grade as per IS 7098-Part1-1988																		
Code CEPRF= EPR Insulated PCP Rubber stranded conductor cable 1.1 KV Grade as per IS 9968																		
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Code CXLPS= XLPE/PVC insulated unarmoured shielded Copper Conductor cable.																		
Code Eth=Ethernet Cable																		
Designation: Prefix for Power cable "P", Control Cable "C", Instrumentation cable "IC", Earthing cable "E" are incorporated																		
Abbrevition: SHT=Reference Sheet No. of schematic drg., FRL=Ferrule, CR1=applicable for Crane 1 only, CR2=Applicable for Crane 2 only, CR12=Applicable for Crane 1 as well as Crane 2, CRC= Common for both Cranes																		
CTF=Cross Travel Festoon, MRHF=Monorail Hoist Festoon, CPBSF=Crane Push Button Station Festoon, HPBSF=Hoist Block Push Button Station Festoon, E-CABLE= Encoder Cable																		
CABLE	**LE DETAILS**		**FROM**				**TO**				**CABLE**	**NO OF**	**RUN**	**REQD**	**Proj-Qty**	**Qty-A/C**	**REMARK**	
NO	**CORES**	**SIZE**	**FROM EQUIPMENT**	**T.B.**	**FRL**	**SHT**	**TO EQUIPMENT**	**T.B.**	**FRL**	**SHT**	**CODE**	**CABLES**	**LENGTH**	**LENGTH**	**2**			
	NO.	**SQ MM**		**GROUP NO**	**NO**	**Nos**		**GROUP NO**	**NO**	**Nos**		**RUN**	**IN MTR**	**IN MTR**	**cranes**			
P9	4C	2.5	D.S.L. CON- DSL	DSL -R	R	3	DIL3- DSL INDICATING	DIL3	R	3	CXLPE	1	5	5	5	CRC		
			CONDUCTORS	-Y	Y		LIGHTS (R.Y.B) (ONE	-X1	Y									
				-B	B		END OF SBS2)	-X1	B									
				-E	E			-X2	E									
P10	4C	2.5	D.S.L. CON- DSL	DSL -R	R	3	DIL4- DSL INDICATING	DIL4	R	3	CXLPE	1	5	5	5	CRC		
			CONDUCTORS	-Y	Y		LIGHTS (R.Y.B) (OTHER	-X1	Y									
				-B	B		END OF SBS2)	-X1	B									
				-E	E			-X2	E									
P11	3C	35	DSL CURRENT	DSLCC -R	1	3	PP- PROTECTIVE	1TBP1	1	3	CXLPE	1	5	5	10	CR12		
			COLLECTORS	-Y	2		PANEL	-3	2									
				-B	3			-4	3									
P12	3C	16	PP- PROTECTIVE	BUSBAR -7	201	3	MHP- MAIN HOIST	2TBP	201	3	CXLPE	1	15	15	30	CR12		
			PANEL	-8	202		PANEL	-3	202									
				-9	203			-4	203									
P13	3C	16	PP- PROTECTIVE	BUSBAR -7	301	3	AHP- AUX. HOIST	3TBP	301	3	CXLPE	1	14	14	28	CR12		
			PANEL	-8	302		PANEL	-3	302									
				-9	303			-4	303									
P14	3C	2.5	PP- PROTECTIVE	BUSBAR -7	401	3	CTP- CROSS TRAVEL	4TBP	401	3	CXLPE	1	13	13	26	CR12		
			PANEL	-8	402		PANEL	-3	402									
				-9	403			-4	403									
P15	3C	6	PP- PROTECTIVE	BUSBAR -7	501	3	LTP- LONG TRAVEL	5TBP	501	3	CXLPE	1	12.5	12.5	25	CR12		
			PANEL	-8	502		PANEL	-3	502									
				-9	503			-4	503									
P16	3C	4	PP- PROTECTIVE	1TBP1 -17	4	3	MRHP- MONO RAIL	7TBP	4	48	CXLPE	1	11	11	22	CR12		
			PANEL	-18	5		HOIST PANEL	-3	5									
				-19	6			-4	6									
P17	5C	2.5	PP- PROTECTIVE	1TBP1 -7	21	4	TRB2- TRASN. BOX-2	TR2A - 415	21	4	CXLPE	1	15.5	15.5	31	CR12		
			PANEL	-8	22		(TR21, TR2E	-415V(Y)	22									
				-9	21A		LIGHTING	TR2B - 415	21A									
				-10	22A		TRANSFORMER	-415V(Y)	22A									

THIS IS PART OF TECHNICAL SPECIFICATION PE-TS-437-501-A001A REV 0

Job: OG - 06		**Customer: BHARAT HEAVY ELECTRICAL LTD**																
Crane: OG-06/250-50-10Tx21M SPAN POWER HOUSE CRANE (CRANE-1 & CRANE-2)						**Ref Drg No.Electrical Layout**				**Prepd. by: RA**		**Rev. No.**	**1**					
TITLE : Cable Schedule						**CONTRACTOR :**				**Ref-FAFECO Drg. N**		**OG-06/250-50-10Tx21M/201**						
FAFECO DRG NO. OG-06/250-50-10Tx21M/212						**Checked by : AGG**				**Ref-BHEL Drg. No.**		**PE-V0-437-501 -A51 7**						
code CXLPE= XLPE Insulated Armoured stranded copper conductor cable 1.1 KV Grade as per IS 7098-Part1-1988																		
code AXLPE= XLPE Insulated Armoured stranded Aluminium conductor cable 1.1 KV Grade as per IS 7098-Part1-1988																		
Code CEPRF= EPR Insulated PCP Rubber stranded conductor cable 1.1 KV Grade as per IS 9968																		
Code RS-485 = Local networks and multidrop communications links																		
Code CXLPS= XLPE/PVC insulated unarmoured shielded Copper Conductor cable.																		
Code Eth=Ethernet Cable																		
Designation: Prefix for Power cable "P", Control Cable "C", Instrumentation cable "IC", Earthing cable "E" are incorporated																		
Abbrevition: SHT=Reference Sheet No. of schematic drg., FRL=Ferrule, CR1=applicable for Crane 1 only, CR2=Applicable for Crane 2 only, CR12=Applicable for Crane 1 as well as Crane 2, CRC= Common for both Cranes																		
CTF=Cross Travel Festoon, MRHF=Monorail Hoist Festoon, CPBSF=Crane Push Button Station Festoon, HPBSF=Hoist Block Push Button Station Festoon, E-CABLE= Encoder Cable																		
CABLE	**LE DETAILS**		**FROM**				**TO**				**CABLE**	**NO OF**	**RUN**	**REQD**	**Proj-Qty**	**Qty-A/C**	**REMARK**	
NO	**CORES**	**SIZE**	**FROM EQUIPMENT**	**T.B.**	**FRL**	**SHT**	**TO EQUIPMENT**	**T.B.**	**FRL**	**SHT**	**CODE**	**CABLES**	**LENGTH**	**LENGTH**	**2**			
	NO.	**SQ MM**		**GROUP NO**	**NO**	**Nos**		**GROUP NO**	**NO**	**Nos**		**RUN**	**IN MTR**	**IN MTR**	**cranes**			

NOT USED

THIS IS PART OF TECHNICAL SPECIFICATION PE-TS-437-501-A001A REV 0

Job: OG - 06		**Customer: BHARAT HEAVY ELECTRICAL LTD**																
Crane: OG-06/250-50-10Tx21M SPAN POWER HOUSE CRANE (CRANE-1 & CRANE-2)							**Ref Drg No.Electrical Layout**					**Prepd. by: RA**		**Rev. No.**	**1**			
TITLE : Cable Schedule							**CONTRACTOR :**					**Ref-FAFECO Drg. N**		**OG-06/250-50-10Tx21M/201**				
FAFECO DRG NO. OG-06/250-50-10Tx21M/212							**Checked by : AGG**					**Ref-BHEL Drg. No.**		**PE-V0-437-501 -A51 7**				
code CXLPE= XLPE Insulated Armoured stranded copper conductor cable 1.1 KV Grade as per IS 7098-Part1-1988																		
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CABLE	**LE DETAILS**		**FROM**				**TO**				**CABLE**	**NO OF**	**RUN**	**REQD**	**Proj-Qty**	**Qty-A/C**	**REMARK**	
NO	**CORES**	**SIZE**	**FROM EQUIPMENT**	**T.B.**	**FRL**	**SHT**	**TO EQUIPMENT**	**T.B.**	**FRL**	**SHT**	**CODE**	**CABLES**	**LENGTH**	**LENGTH**	**2**			
	NO.	**SQ MM**		**GROUP NO**	**NO**	**Nos**		**GROUP NO**	**NO**	**Nos**		**RUN**	**IN MTR**	**IN MTR**	**cranes**			
P18	5C	2.5	PP- PROTECTIVE	1TBP2 -12	11	4	TRB1- TRASN. BOX-1	TR1A - 415	11	4	CXLPE	1	16	16	32	CR12		
			PANEL	-13	12		(TR1A, TR1B)	-415V(Y)	12									
				-14	11A		CONTROL	TR1B - 415'	11A									
				-15	12A		TRANSFORMER	-415V(Y)	12A									
P19	4C	16	MHP - MAIN HOIST	2TBP -6	2U	15	JBG- JN. BOX. ON	11TBP	2U	15	CXLPE	1	20	20	40	CR12		
			PANEL (2m)	-7	2V		GRIDER (2m)	-3	2V									
				-8	2W			-4	2W									
				-9	PE			-5	PE									
P20	3C	2.5	MHP - MAIN HOIST	2TBP -14	2R4	16	JBG- JN. BOX. ON	11TBP	2R4	16	CXLPE	1	20	20	40	CR12		
			PANEL (2S1)	-15	2Y4		GRIDER (2S1)	-8	2Y4									
				-16	2B4			-9	2B4									
P21	3C	2.5	MHP - MAIN HOIST	2TBP -18	207	16	JBG- JN. BOX. ON	11TBP	207	16	CXLPE	1	20	20	40	CR12		
			PANEL (2S2)	-19	208		GRIDER (2S2)	-12	208									
P22	4C	16	JBG- JN. BOX. ON	11TBP -2	2U	15	JBT- JN. BOX. ON	12TBP	2U	15	CEPRF	1	31	31	62	CR12	CTF	
			GRIDER (2m)	-3	2V		TROLLEY (2m)	-3	2V									
				-4	2W			-4	2W									
				-5	PE			-5	PE									
P23	3C	2.5	JBG- JN. BOX. ON	11TBP -7	2R4	16	JBT- JN. BOX. ON	12TBP	2R4	16	CEPRF	1	31	31	62	CR12	CTF	
			GRIDER (2S1)	-8	2Y4		TROLLEY (2S1)	-8	2Y4									
				-9	2B4			-9	2B4									
P24	3C	2.5	JBG- JN. BOX. ON	11TBP -11	207	16	JBT- JN. BOX. ON	12TBP	207	16	CEPRF	1	31	31	62	CR12	CTF	
			GRIDER (2S2)	-12	208		TROLLEY (2S2)	-12	208									
P25	4C	16	JBT- JN. BOX. ON	12TBP -2	2U	15	2m- MAIN HOIST	2m	2U	15	CXLPE	1	6	6	12	CR12		
			TROLLEY (2m)	-3	2V		MOTOR	-V	2V									
				-4	2W			-W	2W									
				-5	PE			-PE	PE									

THIS IS PART OF TECHNICAL SPECIFICATION PE-TS-437-501-A001A REV 0

Job: OG - 06		**Customer: BHARAT HEAVY ELECTRICAL LTD**																
Crane: OG-06/250-50-10Tx21M SPAN POWER HOUSE CRANE (CRANE-1 & CRANE-2)						**Ref Drg No.Electrical Layout**					**Prepd. by: RA**		**Rev. No.**	**1**				
TITLE : Cable Schedule						**CONTRACTOR :**					**Ref-FAFECO Drg. N**		**OG-06/250-50-10Tx21M/201**					
FAFECO DRG NO. OG-06/250-50-10Tx21M/212						**Checked by : AGG**					**Ref-BHEL Drg. No.**		**PE-V0-437-501 -A51 7**					
code CXLPE= XLPE Insulated Armoured stranded copper conductor cable 1.1 KV Grade as per IS 7098-Part1-1988																		
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Designation: Prefix for Power cable "P", Control Cable "C", Instrumentation cable "IC", Earthing cable "E" are incorporated																		
Abbrevition: SHT=Reference Sheet No. of schematic drg., FRL=Ferrule, CR1=applicable for Crane 1 only, CR2=Applicable for Crane 2 only, CR12=Applicable for Crane 1 as well as Crane 2, CRC= Common for both Cranes																		
CTF=Cross Travel Festoon, MRHF=Monorail Hoist Festoon, CPBSF=Crane Push Button Station Festoon, HPBSF=Hoist Block Push Button Station Festoon, E-CABLE= Encoder Cable																		
CABLE	**LE DETAILS**		**FROM**				**TO**				**CABLE**	**NO OF**	**RUN**	**REQD**	**Proj-Qty**	**Qty-A/C**	**REMARK**	
NO	**CORES**	**SIZE**	**FROM EQUIPMENT**	**T.B.**	**FRL**	**SHT**	**TO EQUIPMENT**	**T.B.**	**FRL**	**SHT**	**CODE**	**CABLES**	**LENGTH**	**LENGTH**	**2**			
	NO.	**SQ MM**		**GROUP NO**	**NO**	**Nos**		**GROUP NO**	**NO**	**Nos**		**RUN**	**IN MTR**	**IN MTR**	**cranes**			
P26	3C	2.5	JBT- JN. BOX. ON	12TBP -7	2R4	16	2S1- M.H. E.H.T.	2S1	2R4	16	CXLPE	1	4	4	8	CR12		
			TROLLEY (2S1)	-8	2Y4		BRAKE	-2	2Y4									
				-9	2B4			-3	2B4									
P27	3C	2.5	JBT- JN. BOX. ON	12TBP -11	207	16	2S2- M.H. DISC	2S2	207	16	CXLPE	1	7	7	14	CR12		
			TROLLEY (2S2)	-12	208		BRAKE	-2	208									
P28	3C	16	MHP - MAIN HOIST	2TBP -11	297	15	2DBR-M.H. BRAKE	2DBR	297	15	CXLPE	1	9	9	18	CR12		
			PANEL	-12	298		RESISTER	-2	298									
P29	4C	16	AHP - AUX. HOIST	3TBP -6	3U	23	JBG- JN. BOX. ON	11TBP	3U	23	CXLPE	1	21	21	42	CR12		
			PANEL (3m)	-7	3V		GRIDER (3m)	-15	3V									
				-8	3W			-16	3W									
				-9	PE			-17	PE									
P30	3C	2.5	MHP - MAIN HOIST	3TBP -14	3R4	24	JBG- JN. BOX. ON	11TBP	3R4	24	CXLPE	1	21	21	42	CR12		
			PANEL (3S1)	-15	3Y4		GRIDER (3S1)	-20	3Y4									
				-16	3B4			-21	3B4									
P31	3C	2.5	MHP - MAIN HOIST	3TBP -18	307	24	JBG- JN. BOX. ON	11TBP	307	24	CXLPE	1	21	21	42	CR12		
			PANEL (3S2)	-19	308		GRIDER (3S2)	-24	308									
P32	4C	16	JBG- JN. BOX. ON	11TBP -14	3U	23	JBT- JN. BOX. ON	12TBP	3U	23	CEPRF	1	31	31	62	CR12	CTF	
			GRIDER (3m)	-15	3V		TROLLEY (3m)	-15	3V									
				-16	3W			-16	3W									
				-17	PE			-17	PE									
P33	3C	2.5	JBG- JN. BOX. ON	11TBP -19	3R4	24	JBT- JN. BOX. ON	12TBP	3R4	24	CEPRF	1	31	31	62	CR12	CTF	
			GRIDER (3S1)	-20	3Y4		TROLLEY (3S1)	-20	3Y4									
				-21	3B4			-21	3B4									
P34	3C	2.5	JBG- JN. BOX. ON	11TBP -23	307	24	JBT- JN. BOX. ON	12TBP	307	24	CEPRF	1	31	31	62	CR12	CTF	
			GRIDER (3S2)	-24	308		TROLLEY (3S2)	-24	308									

THIS IS PART OF TECHNICAL SPECIFICATION PE-TS-437-501-A001A REV 0

Job: OG - 06		**Customer: BHARAT HEAVY ELECTRICAL LTD**																
Crane: OG-06/250-50-10Tx21M SPAN POWER HOUSE CRANE (CRANE-1 & CRANE-2)						**Ref Drg No.Electrical Layout**				**Prepd. by: RA**		**Rev. No.**	**1**					
TITLE : Cable Schedule						**CONTRACTOR :**				**Ref-FAFECO Drg. N**		**OG-06/250-50-10Tx21M/201**						
FAFECO DRG NO. OG-06/250-50-10Tx21M/212						**Checked by : AGG**				**Ref-BHEL Drg. No.**		**PE-V0-437-501 -A51 7**						
code CXLPE= XLPE Insulated Armoured stranded copper conductor cable 1.1 KV Grade as per IS 7098-Part1-1988																		
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Designation: Prefix for Power cable "P", Control Cable "C", Instrumentation cable "IC", Earthing cable "E" are incorporated																		
Abbrevition: SHT=Reference Sheet No. of schematic drg., FRL=Ferrule, CR1=applicable for Crane 1 only, CR2=Applicable for Crane 2 only, CR12=Applicable for Crane 1 as well as Crane 2, CRC= Common for both Cranes																		
CTF=Cross Travel Festoon, MRHF=Monorail Hoist Festoon, CPBSF=Crane Push Button Station Festoon, HPBSF=Hoist Block Push Button Station Festoon, E-CABLE= Encoder Cable																		
CABLE	**LE DETAILS**		**FROM**				**TO**				**CABLE**	**NO OF**	**RUN**	**REQD**	**Proj-Qty**	**Qty-A/C**	**REMARK**	
NO	**CORES**	**SIZE**	**FROM EQUIPMENT**	**T.B.**	**FRL**	**SHT**	**TO EQUIPMENT**	**T.B.**	**FRL**	**SHT**	**CODE**	**CABLES**	**LENGTH**	**LENGTH**	**2**			
	NO.	**SQ MM**		**GROUP NO**	**NO**	**Nos**		**GROUP NO**	**NO**	**Nos**		**RUN**	**IN MTR**	**IN MTR**	**cranes**			

NOT USED

THIS IS PART OF TECHNICAL SPECIFICATION PE-TS-437-501-A001A REV 0

Job: OG - 06		**Customer: BHARAT HEAVY ELECTRICAL LTD**																
Crane: OG-06/250-50-10Tx21M SPAN POWER HOUSE CRANE (CRANE-1 & CRANE-2)							**Ref Drg No.Electrical Layout**					**Prepd. by: RA**		**Rev. No.**	**1**			
TITLE : Cable Schedule							**CONTRACTOR :**					**Ref-FAFECO Drg. N**		**OG-06/250-50-10Tx21M/201**				
FAFECO DRG NO. OG-06/250-50-10Tx21M/212							**Checked by : AGG**					**Ref-BHEL Drg. No.**		**PE-V0-437-501 -A51 7**				
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CABLE	**LE DETAILS**		**FROM**				**TO**				**CABLE**	**NO OF**	**RUN**	**REQD**	**Proj-Qty**	**Qty-A/C**	**REMARK**	
NO	**CORES**	**SIZE**	**FROM EQUIPMENT**	**T.B.**	**FRL**	**SHT**	**TO EQUIPMENT**	**T.B.**	**FRL**	**SHT**	**CODE**	**CABLES**	**LENGTH**	**LENGTH**	**2**			
	NO.	**SQ MM**		**GROUP NO**	**NO**	**Nos**		**GROUP NO**	**NO**	**Nos**		**RUN**	**IN MTR**	**IN MTR**	**cranes**			
P35	4C	16	JBT- JN. BOX. ON	12TBP -14	3U	23	3m- AUX. HOIST	3m	3U	23	CXLPE	1	12	12	24	CR12		
			TROLLEY (3m)	-15	3V		MOTOR	-V	3V									
				-16	3W			-W	3W									
				-17	PE			-PE	PE									
P36	3C	2.5	JBT- JN. BOX. ON	12TBP -19	3R4	24	3S1- A.H. E.H.T.	3S1	3R4	24	CXLPE	1	14	14	28	CR12		
			TROLLEY (3S1)	-20	3Y4		BRAKE	-2	3Y4									
				-21	3B4			-3	3B4									
P37	3C	2.5	JBT- JN. BOX. ON	12TBP -23	307	24	3S2- A.H. DISC	3S2	307	24	CXLPE	1	12	12	24	CR12		
			TROLLEY (3S2)	-24	308		BRAKE	-2	308									
P38	3C	16	AHP - AUX. HOIST	3TBP -11	397	23	3DBR-A.H. BRAKE	3DBR	397	23	CXLPE	1	9	9	18	CR12		
			PANEL	-12	398		RESISTER	-2	398									
P39	4C	2.5	CTP - CROSS TRAVEL	4TBP -6	4U1	30	JBG- JN. BOX. ON	11TBP	4U1	30	CXLPE	1	22	22	44	CR12		
			PANEL (4m1)	-7	4V1		GRIDER (4m1)	-27	4V1									
				-8	4W1			-28	4W1									
				-9	PE1			-29	PE1									
P40	4C	2.5	CTP - CROSS TRAVEL	4TBP -11	4U2	30	JBG- JN. BOX. ON	11TBP	4U2	30	CXLPE	1	22	22	44	CR12		
			PANEL (4m2)	-12	4V2		GRIDER (4m2)	-31	4V2									
				-13	4W2			-32	4W2									
				-14	PE2			-33	PE2									
P41	3C	2.5	CTP - CROSS TRAVEL	4TBP -18	4R4	31	JBG- JN. BOX. ON	11TBP	4R4	31	CXLPE	1	22	22	44	CR12		
			PANEL (4S1 /4S2)	-19	4Y4		GRIDER (4S1 / 4S2)	-36	4Y4									
				-20	4B4			-37	4B4									
P42	3C	2.5	CTP - CROSS TRAVEL	4TBP -22	407	31	JBG- JN. BOX. ON	11TBP	407	31	CXLPE	1	22	22	44	CR12		
			PANEL (4S3)	-23	408		GRIDER (4S3)	-40	408									
P43	3C	2.5	CTP - CROSS TRAVEL	4TBP -24	409	31	JBG- JN. BOX. ON	11TBP	409	31	CXLPE	1	22	22	44	CR12		
			PANEL (4S4)	-25	410		GRIDER (4S4)	-42	410									

THIS IS PART OF TECHNICAL SPECIFICATION PE-TS-437-501-A001A REV 0

Job: OG - 06		**Customer: BHARAT HEAVY ELECTRICAL LTD**																
Crane: OG-06/250-50-10Tx21M SPAN POWER HOUSE CRANE (CRANE-1 & CRANE-2)							**Ref Drg No.Electrical Layout**					**Prepd. by: RA**		**Rev. No.**	**1**			
TITLE : Cable Schedule							**CONTRACTOR :**					**Ref-FAFECO Drg. N**		**OG-06/250-50-10Tx21M/201**				
FAFECO DRG NO. OG-06/250-50-10Tx21M/212							**Checked by : AGG**					**Ref-BHEL Drg. No.**		**PE-V0-437-501 -A51 7**				
code CXLPE= XLPE Insulated Armoured stranded copper conductor cable 1.1 KV Grade as per IS 7098-Part1-1988																		
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CABLE	**LE DETAILS**		**FROM**				**TO**				**CABLE**	**NO OF**	**RUN**	**REQD**	**Proj-Qty**	**Qty-A/C**	**REMARK**	
NO	**CORES**	**SIZE**	**FROM EQUIPMENT**	**T.B.**	**FRL**	**SHT**	**TO EQUIPMENT**	**T.B.**	**FRL**	**SHT**	**CODE**	**CABLES**	**LENGTH**	**LENGTH**	**2**			
	NO.	**SQ MM**		**GROUP NO**	**NO**	**Nos**		**GROUP NO**	**NO**	**Nos**		**RUN**	**IN MTR**	**IN MTR**	**cranes**			
P44	4C	2.5	JBG- JN. BOX. ON	11TBP -26	4U1	30	JBT- JN. BOX. ON	12TBP -27	4U1	30	CEPRF	1	31	31	62	CR12	CTF	
			GRIDER (4m1)	-27	4V1		TROLLEY (4m1)	-28	4V1									
				-28	4W1			-29	4W1									
				-29	PE1				PE1									
P45	4C	2.5	JBG- JN. BOX. ON	11TBP -30	4U2	30	JBT- JN. BOX. ON	12TBP	4U2	30	CEPRF	1	31	31	62	CR12	CTF	
			GRIDER (4m2)	-31	4V2		TROLLEY (4m2)	-31	4V2									
				-32	4W2			-32	4W2									
				-33	PE2			-33	PE2									
P46	3C	2.5	JBG- JN. BOX. ON	11TBP -35	4R4	31	JBT- JN. BOX. ON	12TBP	4R4	31	CEPRF	1	31	31	62	CR12	CTF	
			GRIDER (4S1 / 4S2)	-36	4Y4		TROLLEY (4S1 / 4S2)	-36	4Y4									
				-37	4B4			-37	4B4									
P47	3C	2.5	JBG- JN. BOX. ON	11TBP -39	407	31	JBT- JN. BOX. ON	12TBP	407	31	CEPRF	1	31	31	62	CR12	CTF	
			GRIDER (4S3)	-40	408		TROLLEY (4S3)	-40	408									
P48	3C	2.5	JBG- JN. BOX. ON	11TBP -41	409	31	JBT- JN. BOX. ON	12TBP	409	31	CEPRF	1	31	31	62	CR12	CTF	
			GRIDER (4S4)	-42	410		TROLLEY (4S4)	-42	410									
P49	4C	2.5	JBT- JN. BOX. ON	12TBP -26	4U1	30	4m1- CROSS TRAVEL	4m1	4U1	30	CXLPE	1	5	5	10	CR12		
			TROLLEY (4m1)	-27	4V1		MOTOR-1	-V	4V1									
				-28	4W1			-W	4W1									
				-29	PE1			-PE	PE1									
P50	4C	2.5	JBT- JN. BOX. ON	12TBP -30	4U2	30	4m2- CROSS TRAVEL	4m2	4U2	30	CXLPE	1	11	11	22	CR12		
			TROLLEY (4m2)	-31	4V2		MOTOR-2	-V	4V2									
				-32	4W2			-W	4W2									
				-33	PE2			-PE	PE2									

THIS IS PART OF TECHNICAL SPECIFICATION PE-TS-437-501-A001A REV 0

Job: OG - 06		**Customer: BHARAT HEAVY ELECTRICAL LTD**																
Crane: OG-06/250-50-10Tx21M SPAN POWER HOUSE CRANE (CRANE-1 & CRANE-2)						**Ref Drg No.Electrical Layout**				**Prepd. by: RA**		**Rev. No.**	**1**					
TITLE : Cable Schedule						**CONTRACTOR :**				**Ref-FAFECO Drg. N**		**OG-06/250-50-10Tx21M/201**						
FAFECO DRG NO. OG-06/250-50-10Tx21M/212						**Checked by : AGG**				**Ref-BHEL Drg. No.**		**PE-V0-437-501 -A51 7**						
code CXLPE= XLPE Insulated Armoured stranded copper conductor cable 1.1 KV Grade as per IS 7098-Part1-1988																		
code AXLPE= XLPE Insulated Armoured stranded Aluminium conductor cable 1.1 KV Grade as per IS 7098-Part1-1988																		
Code CEPRF= EPR Insulated PCP Rubber stranded conductor cable 1.1 KV Grade as per IS 9968																		
Code RS-485 = Local networks and multidrop communications links																		
Code CXLPS= XLPE/PVC insulated unarmoured shielded Copper Conductor cable.																		
Code Eth=Ethernet Cable																		
Designation: Prefix for Power cable "P", Control Cable "C", Instrumentation cable "IC", Earthing cable "E" are incorporated																		
Abbrevition: SHT=Reference Sheet No. of schematic drg., FRL=Ferrule, CR1=applicable for Crane 1 only, CR2=Applicable for Crane 2 only, CR12=Applicable for Crane 1 as well as Crane 2, CRC= Common for both Cranes																		
CTF=Cross Travel Festoon, MRHF=Monorail Hoist Festoon, CPBSF=Crane Push Button Station Festoon, HPBSF=Hoist Block Push Button Station Festoon, E-CABLE= Encoder Cable																		
CABLE	**LE DETAILS**		**FROM**				**TO**				**CABLE**	**NO OF**	**RUN**	**REQD**	**Proj-Qty**	**Qty-A/C**	**REMARK**	
NO	**CORES**	**SIZE**	**FROM EQUIPMENT**	**T.B.**	**FRL**	**SHT**	**TO EQUIPMENT**	**T.B.**	**FRL**	**SHT**	**CODE**	**CABLES**	**LENGTH**	**LENGTH**	**2**			
	NO.	**SQ MM**		**GROUP NO**	**NO**	**Nos**		**GROUP NO**	**NO**	**Nos**		**RUN**	**IN MTR**	**IN MTR**	**cranes**			
P51	3C	2.5	JBT- JN. BOX. ON	12TBP -35	4R4	31	4S1- CROSS TRAVEL	4S1	4R4	31	CXLPE	1	5	5	10	CR12		
			TROLLEY (4S1)	-36	4Y4		E.H.T BRAKE-1	-2	4Y4									
				-37	4B4			-3	4B4									

THIS IS PART OF TECHNICAL SPECIFICATION PE-TS-437-501-A001A REV 0

Job: OG - 06		**Customer: BHARAT HEAVY ELECTRICAL LTD**																
Crane: OG-06/250-50-10Tx21M SPAN POWER HOUSE CRANE (CRANE-1 & CRANE-2)						**Ref Drg No.Electrical Layout**					**Prepd. by: RA**		**Rev. No.**	**1**				
TITLE : Cable Schedule						**CONTRACTOR :**					**Ref-FAFECO Drg. N**		**OG-06/250-50-10Tx21M/201**					
FAFECO DRG NO. OG-06/250-50-10Tx21M/212						**Checked by : AGG**					**Ref-BHEL Drg. No.**		**PE-V0-437-501 -A51 7**					
code CXLPE= XLPE Insulated Armoured stranded copper conductor cable 1.1 KV Grade as per IS 7098-Part1-1988																		
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CTF=Cross Travel Festoon, MRHF=Monorail Hoist Festoon, CPBSF=Crane Push Button Station Festoon, HPBSF=Hoist Block Push Button Station Festoon, E-CABLE= Encoder Cable																		
CABLE	**LE DETAILS**		**FROM**					**TO**				**CABLE**	**NO OF**	**RUN**	**REQD**	**Proj-Qty**	**Qty-A/C**	**REMARK**
NO	**CORES**	**SIZE**	**FROM EQUIPMENT**	**T.B.**	**FRL**	**SHT**		**TO EQUIPMENT**	**T.B.**	**FRL**	**SHT**	**CODE**	**CABLES**	**LENGTH**	**LENGTH**	**2**		
	NO.	**SQ MM**		**GROUP NO**	**NO**	**Nos**			**GROUP NO**	**NO**	**Nos**		**RUN**	**IN MTR**	**IN MTR**	**cranes**		
P52	3C	2.5	JBT- JN. BOX. ON	12TBP -35	4R4	31		4S2- CROSS TRAVEL	4S2	4R4	31	CXLPE	1	12	12	24	CR12	
			TROLLEY (4S2)	-36	4Y4			E.H.T BRAKE-2	-2	4Y4								
				-37	4B4				-3	4B4								
P53	3C	2.5	JBT- JN. BOX. ON	12TBP -39	407	31		4S3- CROSS TRAVEL	4S3	407	31	CXLPE	1	5	5	10	CR12	
			TROLLEY (4S3)	-40	408			DISC BRAKE-1	-2	408								
P54	3C	2.5	JBT- JN. BOX. ON	12TBP -41	409	31		4S4- CROSS TRAVEL	4S4	409	31	CXLPE	1	12	12	24	CR12	
			TROLLEY (4S4)	-42	410			DISC BRAKE-2	-2	410								
P55	3C	2.5	CTP- CROSS TRAVEL	4TBP -16	497	30		4DBR-C.T. BRAKE	4DBR	497	30	CXLPE	1	9	9	18	CR12	
			PANEL (4DBR)	-17	498			RESISTER	-2	498								
P56	4C	2.5	LTP - LONG TRAVEL	5TBP -6	5U1	37		5m1- LONG TRAVEL	5m1	5U1	37	CXLPE	1	15	15	30	CR12	
			PANEL (5m1)	-7	5V1			MOTOR-1	-V	5V1								
				-8	5W1				-W	5W1								
				-9	PE1				-PE	PE1								
P57	4C	2.5	LTP - LONG TRAVEL	5TBP -10	5U2	37		5m2- LONG TRAVEL	5m2	5U2	37	CXLPE	1	15	15	30	CR12	
			PANEL (5m2)	-11	5V2			MOTOR-2	-V	5V2								
				-12	5W2				-W	5W2								
				-13	PE2				-PE	PE2								
P58	4C	2.5	LTP - LONG TRAVEL	5TBP -14	5U3	37		5m3- LONG TRAVEL	5m3	5U3	37	CXLPE	1	25	25	50	CR12	
			PANEL (5m3)	-15	5V3			MOTOR-3	-V	5V3								
				-16	5W3				-W	5W3								
				-17	PE3				-PE	PE3								
P59	4C	2.5	LTP - LONG TRAVEL	5TBP -18	5U4	37		5m4- LONG TRAVEL	5m4	5U4	37	CXLPE	1	27	27	54	CR12	
			PANEL (5m4)	-19	5V4			MOTOR-4	-V	5V4								
				-20	5W4				-W	5W4								
				-21	PE4				-PE	PE4								
P60	3C	2.5	LTP - LONG TRAVEL	5TBP -26	5R4	38		5S1- LONG TRAVEL	5S1	5R4	38	CXLPE	1	15	15	30	CR12	
			PANEL (5S1)	-28	5Y4			E.H.T BRAKE-1	-2	5Y4								
				-30	5B4				-3	5B4								

THIS IS PART OF TECHNICAL SPECIFICATION PE-TS-437-501-A001A REV 0

Job: OG - 06		**Customer: BHARAT HEAVY ELECTRICAL LTD**																
Crane: OG-06/250-50-10Tx21M SPAN POWER HOUSE CRANE (CRANE-1 & CRANE-2)						**Ref Drg No.Electrical Layout**					**Prepd. by: RA**		**Rev. No.**	**1**				
TITLE : Cable Schedule						**CONTRACTOR :**					**Ref-FAFECO Drg. N**		**OG-06/250-50-10Tx21M/201**					
FAFECO DRG NO. OG-06/250-50-10Tx21M/212						**Checked by : AGG**					**Ref-BHEL Drg. No.**		**PE-V0-437-501 -A51 7**					
code CXLPE= XLPE Insulated Armoured stranded copper conductor cable 1.1 KV Grade as per IS 7098-Part1-1988																		
code AXLPE= XLPE Insulated Armoured stranded Aluminium conductor cable 1.1 KV Grade as per IS 7098-Part1-1988																		
Code CEPRF= EPR Insulated PCP Rubber stranded conductor cable 1.1 KV Grade as per IS 9968																		
Code RS-485 = Local networks and multidrop communications links																		
Code CXLPS= XLPE/PVC insulated unarmoured shielded Copper Conductor cable.																		
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Designation: Prefix for Power cable "P", Control Cable "C", Instrumentation cable "IC", Earthing cable "E" are incorporated																		
Abbrevition: SHT=Reference Sheet No. of schematic drg., FRL=Ferrule, CR1=applicable for Crane 1 only, CR2=Applicable for Crane 2 only, CR12=Applicable for Crane 1 as well as Crane 2, CRC= Common for both Cranes																		
CTF=Cross Travel Festoon, MRHF=Monorail Hoist Festoon, CPBSF=Crane Push Button Station Festoon, HPBSF=Hoist Block Push Button Station Festoon, E-CABLE= Encoder Cable																		
CABLE	**LE DETAILS**		**FROM**					**TO**				**CABLE**	**NO OF**	**RUN**	**REQD**	**Proj-Qty**	**Qty-A/C**	**REMARK**
NO	**CORES**	**SIZE**	**FROM EQUIPMENT**	**T.B.**	**FRL**	**SHT**		**TO EQUIPMENT**	**T.B.**	**FRL**	**SHT**	**CODE**	**CABLES**	**LENGTH**	**LENGTH**	**2**		
	NO.	**SQ MM**		**GROUP NO**	**NO**	**Nos**			**GROUP NO**	**NO**	**Nos**		**RUN**	**IN MTR**	**IN MTR**	**cranes**		
P61	3C	2.5	LTP - LONG TRAVEL	5TBP -26	5R4	38		5S2- LONG TRAVEL	5S2	5R4	38	CXLPE	1	15	15	30	CR12	
			PANEL (5S2)	-28	5Y4			E.H.T BRAKE-2	-2	5Y4								
				-30	5B4				-3	5B4								
P62	3C	2.5	LTP - LONG TRAVEL	5TBP -27	5R4	38		5S3- LONG TRAVEL	5S3	5R4	38	CXLPE	1	25	25	50	CR12	
			PANEL (5S3)	-29	5Y4			E.H.T BRAKE-3	-2	5Y4								
				-31	5B4				-3	5B4								
P63	3C	2.5	LTP - LONG TRAVEL	5TBP -27	5R4	38		5S4- LONG TRAVEL	5S4	5R4	38	CXLPE	1	27	27	54	CR12	
			PANEL (5S4)	-29	5Y4			E.H.T BRAKE-4	-2	5Y4								
				-31	5B4				-3	5B4								
P64	3C	2.5	LTP - LONG TRAVEL	5TBP -33	507	38		5S5- LONG TRAVEL	5S5	507	38	CXLPE	1	15	15	30	CR12	
			PANEL (5S5)	-34	508			DISC BRAKE-1	-2	508								
P65	3C	2.5	LTP - LONG TRAVEL	5TBP -35	509	38		5S6- LONG TRAVEL	5S6	509	38	CXLPE	1	15	15	30	CR12	
			PANEL (5S6)	-36	510			DISC BRAKE-2	-2	510								
P66	3C	2.5	LTP - LONG TRAVEL	5TBP -37	511	38		5S7- LONG TRAVEL	5S7	511	38	CXLPE	1	25	25	50	CR12	
			PANEL (5S7)	-38	512			DISC BRAKE-3	-2	512								
P67	3C	2.5	LTP - LONG TRAVEL	5TBP -39	513	38		5S8- LONG TRAVEL	5S8	513	38	CXLPE	1	27	27	54	CR12	
			PANEL (5S8)	-40	514			DISC BRAKE-4	-2	514								
P68	3C	4	LTP- LONG TRAVEL	5TBP -23	597	37		5DBR-L.T. BRAKE	5DBR	597	37	CXLPE	1	8	8	16	CR12	
			PANEL (5DBR)	-24	598			RESISTER	-2	598								
P69	4C	2.5	MRHP- MONO RAIL	8TBP -2	8U	51		MRHBJB- MONO RAIL	24TBP	8U	51	CEPRF	1	30	30	60	CR12	MRHF
			HOIST PANEL	-3	8V			HOIST BLOCK JN. BOX	-3	8V								
				-4	8W			(8m)	-4	8W								
				-5	PE				-5	PE								
P70	3C	2.5	MRHP- MONO RAIL	8TBP -14	807	52		MRHBJB- MONO RAIL	24TBP	807	52	CEPRF	1	30	30	60	CR12	MRHF
			HOIST PANEL	-15	808			HOIST BLOCK JN. BOX	-8	808								
								(8S) PAGE 11 OF 40										

THIS IS PART OF TECHNICAL SPECIFICATION PE-TS-437-501-A001A REV 0

Job: OG - 06		**Customer: BHARAT HEAVY ELECTRICAL LTD**																
Crane: OG-06/250-50-10Tx21M SPAN POWER HOUSE CRANE (CRANE-1 & CRANE-2)							**Ref Drg No.Electrical Layout**					**Prepd. by: RA**		**Rev. No.**	**1**			
TITLE : Cable Schedule							**CONTRACTOR :**					**Ref-FAFECO Drg. N**		**OG-06/250-50-10Tx21M/201**				
FAFECO DRG NO. OG-06/250-50-10Tx21M/212							**Checked by : AGG**					**Ref-BHEL Drg. No.**		**PE-V0-437-501 -A51 7**				
code CXLPE= XLPE Insulated Armoured stranded copper conductor cable 1.1 KV Grade as per IS 7098-Part1-1988																		
code AXLPE= XLPE Insulated Armoured stranded Aluminium conductor cable 1.1 KV Grade as per IS 7098-Part1-1988																		
Code CEPRF= EPR Insulated PCP Rubber stranded conductor cable 1.1 KV Grade as per IS 9968																		
Code RS-485 = Local networks and multidrop communications links																		
Code CXLPS= XLPE/PVC insulated unarmoured shielded Copper Conductor cable.																		
Code Eth=Ethernet Cable																		
Designation: Prefix for Power cable "P", Control Cable "C", Instrumentation cable "IC", Earthing cable "E" are incorporated																		
Abbrevition: SHT=Reference Sheet No. of schematic drg., FRL=Ferrule, CR1=applicable for Crane 1 only, CR2=Applicable for Crane 2 only, CR12=Applicable for Crane 1 as well as Crane 2, CRC= Common for both Cranes																		
CTF=Cross Travel Festoon, MRHF=Monorail Hoist Festoon, CPBSF=Crane Push Button Station Festoon, HPBSF=Hoist Block Push Button Station Festoon, E-CABLE= Encoder Cable																		
CABLE	**LE DETAILS**		**FROM**				**TO**				**CABLE**	**NO OF**	**RUN**	**REQD**	**Proj-Qty**	**Qty-A/C**	**REMARK**	
NO	**CORES**	**SIZE**	**FROM EQUIPMENT**	**T.B.**	**FRL**	**SHT**	**TO EQUIPMENT**	**T.B.**	**FRL**	**SHT**	**CODE**	**CABLES**	**LENGTH**	**LENGTH**	**2**			
	NO.	**SQ MM**		**GROUP NO**	**NO**	**Nos**		**GROUP NO**	**NO**	**Nos**		**RUN**	**IN MTR**	**IN MTR**	**cranes**			
P71	4C	2.5	MRHBJB- MONO RAIL	24TBP -2	8U	51	8m- MONO RAIL	8m	8U	51	CXLPE	1	3	3	6	CR12		
			HOIST BLOCK JN. BOX	-3	8V		HOIST MOTOR	-V	8V									
			(8m)	-4	8W		(8m)	-W	8W									
				-5	PE			-PE	PE									
P72	3C	2.5	MRHBJB- MONO RAIL	24TBP -7	807	52	8S- MONO RAIL	8S	807	52	CXLPE	1	3	3	6	CR12		
			HOIST BLOCK JN. BOX	-8	808		HOIST DISC BRAKE	-2	808									
			(8S)				(8S)											
P73	3C	2.5	MRHP- MONO RAIL	8TBP -7	897	51	8DBR- M.R. HOIST	8DBR	897	51	CXLPE	1	9	9	18	CR12		
			HOIST PANEL	-8	898		BRAKE RESISTOR	-2	898									
P74	4C	2.5	MRHP- MONO RAIL	9TBP -2	9U	58	MRHBJB- MONO RAIL	24TBP	9U	58	CEPRF	1	30	30	60	CR12	MRHF	
			HOIST PANEL	-3	9V		HOIST BLOCK JN. BOX	-11	9V									
				-4	9W		(9m)	-12	9W									
				-5	PE			-13	PE									
P75	3C	2.5	MRHP- MONO RAIL	9TBP -14	907	59	MRHBJB- MONO RAIL	24TBP	907	59	CEPRF	1	30	30	60	CR12	MRHF	
			HOIST PANEL	-15	908		HOIST BLOCK JN. BOX	-16	908									
							(9S)											
P76	4C	2.5	MRHBJB- MONO RAIL	24TBP -10	9U	58	9m- MONO RAIL	9m	9U	58	CXLPE	1	3	3	6	CR12	MRHF	
			HOIST BLOCK JN. BOX	-11	9V		CROSS TRAVEL	-V	9V									
			(9m)	-12	9W		MOTOR (9m)	-W	9W									
				-13	PE			-PE	PE									
P77	3C	2.5	MRHBJB- MONO RAIL	24TBP -15	907	59	9S- MONO RAIL	9S	907	59	CXLPE	1	3	3	6	CR12		
			HOIST BLOCK JN. BOX	-16	908		CROSS TRAVEL DISC	-2	908									
			(9S)				BRAKE (9S)											
P78	3C	2.5	MRHP- MONO RAIL	9TBP -7	997	58	9DBR- M.R. CROSS	9DBR	997	58	CXLPE	1	10	10	20	CR12		
			HOIST PANEL	-8	998		TRAVEL BRAKE	-2	998									
							RESISTOR											
P79	3.5C	70	TEMPORARY CABLE FOR OPERATION OF CRANE DURING ERECTION STAGE OF THE PLANT.bay length 158+25=183 mtrs.Crane 1=183/2=91.5			3	PAGE 12 OF 40			3	CEPRF	1	91.5	91.5	91.5	CR1		

THIS IS PART OF TECHNICAL SPECIFICATION PE-TS-437-501-A001A REV 0

Job: OG - 06		**Customer: BHARAT HEAVY ELECTRICAL LTD**				**Ref Drg No.Electrical Layout**				**Prepd. by: RA**		**Rev. No.**	**1**				
Crane: OG-06/250-50-10Tx21M SPAN POWER HOUSE CRANE (CRANE-1 & CRANE-2)						**CONTRACTOR :**				**Ref-FAFECO Drg. N**		**OG-06/250-50-10Tx21M/201**					
TITLE : Cable Schedule						**Checked by : AGG**				**Ref-BHEL Drg. No.**		**PE-V0-437-501 -A51 7**					
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CTF=Cross Travel Festoon, MRHF=Monorail Hoist Festoon, CPBSF=Crane Push Button Station Festoon, HPBSF=Hoist Block Push Button Station Festoon, E-CABLE= Encoder Cable																	
CABLE	**LE DETAILS**		**FROM**				**TO**				**CABLE**	**NO OF**	**RUN**	**REQD**	**Proj-Qty**	**Qty-A/C**	**REMARK**
NO	**CORES**	**SIZE**	**FROM EQUIPMENT**	**T.B.**	**FRL**	**SHT**	**TO EQUIPMENT**	**T.B.**	**FRL**	**SHT**	**CODE**	**CABLES**	**LENGTH**	**LENGTH**	**2**		
	NO.	**SQ MM**		**GROUP NO**	**NO**	**Nos**		**GROUP NO**	**NO**	**Nos**		**RUN**	**IN MTR**	**IN MTR**	**cranes**		
P80	3.5C	70	TEMPORARY CABLE FOR OPERATION OF CRANE DURING ERECTION STAGE OF THE PLANT.bay length 158+25=183 mtrs.Crane 2=183/2=91.5			3				3	CEPRF	1	91.5	91.5	91.5	CR2	

THIS IS PART OF TECHNICAL SPECIFICATION PE-TS-437-501-A001A REV 0

Job: OG - 06		**Customer: BHARAT HEAVY ELECTRICAL LTD**																
Crane: OG-06/250-50-10Tx21M SPAN POWER HOUSE CRANE (CRANE-1 & CRANE-2)							**Ref Drg No.Electrical Layout**					**Prepd. by: RA**		**Rev. No.**	**1**			
TITLE : Cable Schedule							**CONTRACTOR :**					**Ref-FAFECO Drg. N**		**OG-06/250-50-10Tx21M/201**				
FAFECO DRG NO. OG-06/250-50-10Tx21M/212							**Checked by : AGG**					**Ref-BHEL Drg. No.**		**PE-V0-437-501 -A51 7**				
code CXLPE= XLPE Insulated Armoured stranded copper conductor cable 1.1 KV Grade as per IS 7098-Part1-1988																		
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Code RS-485 = Local networks and multidrop communications links																		
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Code Eth=Ethernet Cable																		
Designation: Prefix for Power cable "P", Control Cable "C", Instrumentation cable "IC", Earthing cable "E" are incorporated																		
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CABLE	**LE DETAILS**		**FROM**				**TO**				**CABLE**	**NO OF**	**RUN**	**REQD**	**Proj-Qty**	**Qty-A/C**	**REMARK**	
NO	**CORES**	**SIZE**	**FROM EQUIPMENT**	**T.B.**	**FRL**	**SHT**	**TO EQUIPMENT**	**T.B.**	**FRL**	**SHT**	**CODE**	**CABLES**	**LENGTH**	**LENGTH**	**2**			
	NO.	**SQ MM**		**GROUP NO**	**NO**	**Nos**		**GROUP NO**	**NO**	**Nos**		**RUN**	**IN MTR**	**IN MTR**	**cranes**			
CONTROLS CABLES:																		
C1	5C	2.5	PP - PROTECTIVE	1TBC2 -2	13	4	TRB1- TRASN. BOX-1	TR1A	13	4	CXLPE	1	16	16	32	CR12		
			PANEL (110V AC)	-3	14		(TR1A, TR1B)	-110V	14									
				-4	13A		CONTROL	-0V	13A									
				-5	14A		TRANSFORMER	-110V	14A									
C2	3C	2.5	PP - PROTECTIVE	1TBC2 -7	105	5	PLCP-PLC PANEL	6TBC	105	5	CXLPE	1	11.5	11.5	23	CR12		
			PANEL (110V AC)	-8	106			-38	106									
				-9	108			-39	108									
C3	3C	2.5	PP - PROTECTIVE	1TBC2 -11	105	6	MLLS-MECH. LINK	MLLS	105	6	CXLPE	1	35	35	70	CR12		
			PANEL (240V AC)	-12	128		LIMIT SWITCH	-2	128									
C4	3C	2.5	PP - PROTECTIVE	1TBC2 -14	149	7	JBG- JN. BOX ON	11TBC	149	7	CXLPE	1	30	30	60	CR12		
			PANEL (240V AC)	-15	150		GRIDER (2LS1 / 3LS1)	-4	150									
C5	3C	2.5	JBG- JN. BOX ON	11TBC -2	149	7	JBT- JN. BOX ON	12TBC	149	7	CEPRF	1	31	31	62	CR12	CTF	
			GRIDER (2LS1 / 3LS1)	-4	150		TROLLEY (2LS1 / 3LS1)	-4	150									
C6	3C	2.5	JBT- JN. BOX ON	12TBC -2	149	7	2LS1-MAIN HOIST	2LS1	149	7	CXLPE	1	9	9	18	CR12		
			TROLLEY (2LS1)	-3	149A		GRAVITY LIMIT	-2	149A									
							SWITCH											
C7	3C	2.5	JBT- JN. BOX ON	12TBC -3	149A	7	3LS1-AUX. HOIST	3LS1	149A	7	CXLPE	1	9	9	18	CR12		
			TROLLEY (3LS1)	-4	150		GRAVITY LIMIT	-2	150									
							SWITCH											
C8	3C	2.5	PP- PROTECTIVE	1TBC2 -17	105	7	2b1- M.H. MASTER	2b1	105	7	CXLPE	1	20	20	40	CR12		
			PANEL (2b1)	-18	158		CONTROLLER		158									
							IN CABIN											
C9	3C	2.5	2b1- M.H. MASTER	2b1 -2	155	7	3b1- A.H. MASTER	3b1	155	7	CXLPE	1	5	5	10	CR12		
			CONTROLLER		158		CONTROLLER		158									
			IN CABIN				IN CABIN											

THIS IS PART OF TECHNICAL SPECIFICATION PE-TS-437-501-A001A REV 0

Job: OG - 06		**Customer: BHARAT HEAVY ELECTRICAL LTD**																
Crane: OG-06/250-50-10Tx21M SPAN POWER HOUSE CRANE (CRANE-1 & CRANE-2)						**Ref Drg No.Electrical Layout**					**Prepd. by: RA**		**Rev. No.**	**1**				
TITLE : Cable Schedule						**CONTRACTOR :**					**Ref-FAFECO Drg. N**		**OG-06/250-50-10Tx21M/201**					
FAFECO DRG NO. OG-06/250-50-10Tx21M/212						**Checked by : AGG**					**Ref-BHEL Drg. No.**		**PE-V0-437-501 -A51 7**					
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Code CEPRF= EPR Insulated PCP Rubber stranded conductor cable 1.1 KV Grade as per IS 9968																		
Code RS-485 = Local networks and multidrop communications links																		
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CTF=Cross Travel Festoon, MRHF=Monorail Hoist Festoon, CPBSF=Crane Push Button Station Festoon, HPBSF=Hoist Block Push Button Station Festoon, E-CABLE= Encoder Cable																		
CABLE	**LE DETAILS**		**FROM**				**TO**				**CABLE**	**NO OF**	**RUN**	**REQD**	**Proj-Qty**	**Qty-A/C**	**REMARK**	
NO	**CORES**	**SIZE**	**FROM EQUIPMENT**	**T.B.**	**FRL**	**SHT**	**TO EQUIPMENT**	**T.B.**	**FRL**	**SHT**	**CODE**	**CABLES**	**LENGTH**	**LENGTH**	**2**			
	NO.	**SQ MM**		**GROUP NO**	**NO**	**Nos**		**GROUP NO**	**NO**	**Nos**		**RUN**	**IN MTR**	**IN MTR**	**cranes**			
C10	3C	2.5	3b1- A.H. MASTER	3b1 -2	156	7	4b1- C.T. MASTER	4b1	156	7	CXLPE	1	5	5	10	CR12		
			CONTROLLER		158		CONTROLLER		158									
			IN CABIN				IN CABIN											
C11	3C	2.5	4b1- C.T. MASTER	4b1 -2	157	7	5b1- L.T. MASTER	5b1	157	7	CXLPE	1	5	5	10	CR12		
			CONTROLLER		158		CONTROLLER	-2	158									
			IN CABIN				IN CABIN											
C12	3C	2.5	PP-PROTECTIVE	1TBC2 -20	171	8	MHP-MAIN HOIST	2TBC	171	16	CXLPE	1	15	15	30	CR12		
			PANEL	-25	107		PANEL	-5	107									
C13	3C	2.5	PP-PROTECTIVE	1TBC2 -21	171	8	AHP-AUX. HOIST	3TBC	171	24	CXLPE	1	14	14	28	CR12		
			PANEL	-26	107		PANEL	-5	107									
C14	3C	2.5	PP-PROTECTIVE	1TBC2 -22	171	8	CTP-CROSS TRAVEL	4TBC	171	31	CXLPE	1	13	13	26	CR12		
			PANEL	-27	107		PANEL	-5	107									
C15	3C	2.5	PP-PROTECTIVE	1TBC2 -23	171	8	LTP-LONG TRAVEL	5TBC	171	38	CXLPE	1	12.5	12.5	25	CR12		
			PANEL	-28	107		PANEL	-5	107									
C16	3C	2.5	PP-PROTECTIVE	1TBC2 -24	171	8	PLCP -PLC PANEL	6TBC	171	45	CXLPE	1	11.5	11.5	23	CR12		
			PANEL	-29	107			-5	107									
C17	3C	2.5	PP-PROTECTIVE	1TBC2 -31	172	8	MRHP- MONO RAIL	7TBC2	172	48	CXLPE	1	11	11	22	CR12		
			PANEL	-33	107		HOIST PANEL	-2	107									
C18	7C	2.5	PP-PROTECTIVE	1TBC2 -36	251	9	MHP-MAIN HOIST	2TBC	251	9	CXLPE	1	15	15	30	CR12		
			PANEL	-37	256		PANEL	-8	256									
				-38	257			-9	257									
				-39	258			-10	258									
				-40	290			-11	290									
				-41	296			-12	296									
C19	7C	2.5	PP-PROTECTIVE	1TBC2 -43	351	9	AHP-AUX. HOIST	3TBC	351	9	CXLPE	1	14	14	28	CR12		
			PANEL	-44	356		PANEL	-8	356									

THIS IS PART OF TECHNICAL SPECIFICATION PE-TS-437-501-A001A REV 0

Job: OG - 06		**Customer: BHARAT HEAVY ELECTRICAL LTD**																
Crane: OG-06/250-50-10Tx21M SPAN POWER HOUSE CRANE (CRANE-1 & CRANE-2)						**Ref Drg No.Electrical Layout**					**Prepd. by: RA**		**Rev. No.**	**1**				
TITLE : Cable Schedule						**CONTRACTOR :**					**Ref-FAFECO Drg. N**		**OG-06/250-50-10Tx21M/201**					
FAFECO DRG NO. OG-06/250-50-10Tx21M/212						**Checked by : AGG**					**Ref-BHEL Drg. No.**		**PE-V0-437-501 -A51 7**					
code CXLPE= XLPE Insulated Armoured stranded copper conductor cable 1.1 KV Grade as per IS 7098-Part1-1988																		
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CABLE	**LE DETAILS**		**FROM**				**TO**				**CABLE**	**NO OF**	**RUN**	**REQD**	**Proj-Qty**	**Qty-A/C**	**REMARK**
NO	**CORES**	**SIZE**	**FROM EQUIPMENT**	**T.B.**	**FRL**	**SHT**	**TO EQUIPMENT**	**T.B.**	**FRL**	**SHT**	**CODE**	**CABLES**	**LENGTH**	**LENGTH**	**2**		
	NO.	**SQ MM**		**GROUP NO**	**NO**	**Nos**		**GROUP NO**	**NO**	**Nos**		**RUN**	**IN MTR**	**IN MTR**	**cranes**		
				-45	357			-9	357								
				-46	358			-10	358								
				-47	390			-11	390								
				-48	396			-12	396								
C20	7C	2.5	PP-PROTECTIVE	1TBC2 -50	451	9	CTP-CROSS TRAVEL	4TBC	451	9	CXLPE	1	13	13	26	CR12	
			PANEL	-51	456		PANEL	-8	456								
				-52	457			-9	457								
				-53	458			-10	458								
				-54	490			-11	490								
				-55	496			-12	496								
C21	14C	2.5	PP-PROTECTIVE	1TBC2 -57	551	9	LTP-LONG TRAVEL	5TBC	551	9	CXLPE	1	12.5	12.5	25	CR12	
			PANEL	-58	556		PANEL	-8	556								
				-59	557			-9	557								
				-60	558			-10	558								
				-61	590			-11	590								
				-62	596			-12	596								
				-63	551A			-40	551A								
				-64	551I			-41	551I								
				-65	582C			-42	582C								
				-66	582D			-43	582D								
				-67	584			-44	584								
				-68	582			-45	582								
C22	10C	2.5	PP-PROTECTIVE	1TBC2 -70	751	9	MRHP-MONO RAIL	7TBC2	751	9	CXLPE	1	11	11	22	CR12	
			PANEL	-71	753		HOIST PANEL	-17	753								
				-72	754			-18	754								
				-73	755			-19	755								
				-74	752			-20	752								
				-75	752			-21	752								
				-76	756			-22	756								
				-77	757			-23	757								

THIS IS PART OF TECHNICAL SPECIFICATION PE-TS-437-501-A001A REV 0

Job: OG - 06		**Customer: BHARAT HEAVY ELECTRICAL LTD**																
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TITLE : Cable Schedule						**CONTRACTOR :**				**Ref-FAFECO Drg. N**		**OG-06/250-50-10Tx21M/201**						
FAFECO DRG NO. OG-06/250-50-10Tx21M/212						**Checked by : AGG**				**Ref-BHEL Drg. No.**		**PE-V0-437-501 -A51 7**						
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NO	**CORES**	**SIZE**	**FROM EQUIPMENT**	**T.B.**	**FRL**	**SHT**	**TO EQUIPMENT**	**T.B.**	**FRL**	**SHT**	**CODE**	**CABLES**	**LENGTH**	**LENGTH**	**2**		
	NO.	**SQ MM**		**GROUP NO**	**NO**	**Nos**		**GROUP NO**	**NO**	**Nos**		**RUN**	**IN MTR**	**IN MTR**	**cranes**		
C23	7C	2.5	PP-PROTECTIVE	1TBC2 -79	851	9	MRHP-MONO RAIL	8TBC	851	9	CXLPE	1	11	11	22	CR12	
			PANEL	-80	855		HOIST PANEL	-8	855								
				-81	856			-9	856								
				-82	857			-10	857								
C24	7C	2.5	PP-PROTECTIVE	1TBC2 -84	951	9	MRHP-MONO RAIL	9TBC	951	9	CXLPE	1	11	11	22	CR12	
			PANEL	-85	955		HOIST PANEL	-8	955								
				-86	956			-9	956								
				-87	957			-10	957								
C25	5C	2.5	PP-PROTECTIVE	1TBC2 -89	670	9	PLCP- PLC PANEL	6TBC	670	9	CXLPE	1	11.5	11.5	23	CR12	
			PANEL	-90	671			-13	671								
				-91	672			-14	672								
C26	3C	2.5	PP-PROTECTIVE	1TBC2 -93	148	7	CKSJB-CONTROL KEY	29TBC	148	7	CXLPE	1	25	25	50	CR12	
			PANEL	-94	149		REMOVABLE SWITCH	-3	149								
							CABIN PLATE FORM										
C27	19C	2.5	PP-PROTECTIVE	1TBC3 -2	106	5	PB+LDB-PUSH	13TBC	106	5	CXLPE	1	25	25	50	CR12	
			PANEL	-3	109		BUTTON + LIGHTING	-3	109								
				-4	110		DISTRIBUTION	-4	110								
				-5	108		BOARD (IN CABIN)	-5	108								
				-6	107			-6	107								
				-7	126	6		-7	126	6							
				-8	127A			-8	127A								
				-9	127B			-9	127B								
				-10	127C	6		-10	127C	6							
				-11	127D			-11	127D								
				-12	128			-12	128								
				-13	107			-13	107								
				-14	107			-14	107								
				-15	105			-15	105								
				-16	131			-16	131								
				-17	132			-17	132								
				-18	138	7		-18	138	7							

THIS IS PART OF TECHNICAL SPECIFICATION PE-TS-437-501-A001A REV 0

Job: OG - 06		**Customer: BHARAT HEAVY ELECTRICAL LTD**																
Crane: OG-06/250-50-10Tx21M SPAN POWER HOUSE CRANE (CRANE-1 & CRANE-2)						**Ref Drg No.Electrical Layout**					**Prepd. by: RA**		**Rev. No.**	**1**				
TITLE : Cable Schedule						**CONTRACTOR :**					**Ref-FAFECO Drg. N**		**OG-06/250-50-10Tx21M/201**					
FAFECO DRG NO. OG-06/250-50-10Tx21M/212						**Checked by : AGG**					**Ref-BHEL Drg. No.**		**PE-V0-437-501 -A51 7**					
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NO	**CORES**	**SIZE**	**FROM EQUIPMENT**	**T.B.**	**FRL**	**SHT**	**TO EQUIPMENT**	**T.B.**	**FRL**	**SHT**	**CODE**	**CABLES**	**LENGTH**	**LENGTH**	**2**			
	NO.	**SQ MM**		**GROUP NO**	**NO**	**Nos**		**GROUP NO**	**NO**	**Nos**		**RUN**	**IN MTR**	**IN MTR**	**cranes**			
C28	19C	2.5	PP-PROTECTIVE	1TBC3 -19	141	7	PB+LDB-PUSH	13TBC	141	7	CXLPE	1	25	25	50	CR12		
			PANEL	-20	143		BUTTON + LIGHTING	-20	143									
				-21	148		DISTRIBUTION	-21	148									
				-22	154		BOARD (IN CABIN)	-22	154									
				-23	107			-23	107									
				-24	158			-24	158									
				-25	160			-25	160									
				-26	166B	8		-26	166B	8								
				-27	166C			-27	166C									
				-28	166D			-28	166D									
				-29	126A	6		-32	126A	6								
				-30	126B			-33	126B									
				-31	165	8		-34	165	8								
				-32	165A			-35	165A									
				-33	107	3		-36	107	3								
				-34	105			-37	105									
C29	19C	2.5	PP-PROTECTIVE	1TBC4 -2	114	5	CPBSJB-CRANE PUSH	14TBC	114	5	CXLPE	1	35	35	70	CR12		
			PANEL	-3	115		BUTTON STATION	-3	115									
				-4	116		JN. BOX.	-4	116									
				-5	117		(ON BRIDGE)	-5	117									
				-6	105	6		-6	105	6								
				-7	131			-7	131									
				-8	132			-8	132									
				-9	139	7		-9	139	7								
				-10	142			-10	142									
				-11	144			-11	144									
				-12	148			-12	148									
				-13	154			-13	154									
				-14	107			-14	107									
C30	10C	2.5	PP-PROTECTIVE	1TBC5 -2	129	6	RRJB-RADIO REMOTE	15TBC	129	6	CXLPE	1	5	5	10	CR12		
			PANEL	-3	131		JN. BOX	-3	131									

THIS IS PART OF TECHNICAL SPECIFICATION PE-TS-437-501-A001A REV 0

Job: OG - 06		**Customer: BHARAT HEAVY ELECTRICAL LTD**				**Ref Drg No.Electrical Layout**					**Prepd. by: RA**		**Rev. No.**	**1**				
Crane: OG-06/250-50-10Tx21M SPAN POWER HOUSE CRANE (CRANE-1 & CRANE-2)						**CONTRACTOR :**					**Ref-FAFECO Drg. N**		**OG-06/250-50-10Tx21M/201**					
TITLE : Cable Schedule						**Checked by : AGG**					**Ref-BHEL Drg. No.**		**PE-V0-437-501 -A51 7**					
FAFECO DRG NO. OG-06/250-50-10Tx21M/212																		
code CXLPE= XLPE Insulated Armoured stranded copper conductor cable 1.1 KV Grade as per IS 7098-Part1-1988																		
code AXLPE= XLPE Insulated Armoured stranded Aluminium conductor cable 1.1 KV Grade as per IS 7098-Part1-1988																		
Code CEPRF= EPR Insulated PCP Rubber stranded conductor cable 1.1 KV Grade as per IS 9968																		
Code RS-485 = Local networks and multidrop communications links																		
Code CXLPS= XLPE/PVC insulated unarmoured shielded Copper Conductor cable.																		
Code Eth=Ethernet Cable																		
Designation: Prefix for Power cable "P", Control Cable "C", Instrumentation cable "IC", Earthing cable "E" are incorporated																		
Abbrevition: SHT=Reference Sheet No. of schematic drg., FRL=Ferrule, CR1=applicable for Crane 1 only, CR2=Applicable for Crane 2 only, CR12=Applicable for Crane 1 as well as Crane 2, CRC= Common for both Cranes																		
CTF=Cross Travel Festoon, MRHF=Monorail Hoist Festoon, CPBSF=Crane Push Button Station Festoon, HPBSF=Hoist Block Push Button Station Festoon, E-CABLE= Encoder Cable																		
CABLE	**LE DETAILS**		**FROM**				**TO**				**CABLE**	**NO OF**	**RUN**	**REQD**	**Proj-Qty**	**Qty-A/C**	**REMARK**	
NO	**CORES**	**SIZE**	**FROM EQUIPMENT**	**T.B.**	**FRL**	**SHT**	**TO EQUIPMENT**	**T.B.**	**FRL**	**SHT**	**CODE**	**CABLES**	**LENGTH**	**LENGTH**	**2**			
	NO.	**SQ MM**		**GROUP NO**	**NO**	**Nos**		**GROUP NO**	**NO**	**Nos**		**RUN**	**IN MTR**	**IN MTR**	**cranes**			
				-4	132			-4	132									
				-5	134			-5	134									
				-6	135			-6	135									
				-7	140	7		-7	140	7								
				-8	148			-8	148									
C31	10C	2.5	PP-PROTECTIVE	1TBC6 -2	145	7	PJB-PLUG JN. BOX	25TBC	145	7	CXLPE	1	30	30	30	CR1		
			PANEL	-3	152			-3	152									
				-4	153			-4	153									
				-5	154			-5	154									
				-6	107			-6	107									
				-7	159			-7	159									
				-8	160			-8	160									
				-9	161			-9	161									
				-10	162			-10	162									
C32	10C	2.5	PP-PROTECTIVE	1TBC6 -2	145	7A	SJB-SOCKET JN. BOX	25TBC	145	7A	CXLPE	1	30	30	30	CR2		
			PANEL	-3	152			-3	152									
				-4	153			-4	153									
				-5	154			-5	154									
				-6	107			-6	107									
				-7	159			-7	159									
				-8	160			-8	160									
				-9	161			-9	161									
				-10	162			-10	162									
C33	3C	2.5	PP-PROTECTIVE	1TBC7 -2	130	5	HBPBS-MONO RAIL	22TBC	130	5	CXLPE	1	45	45	90	CR12		
			PANEL	-3	131		HOIST BLOCK PUSH	-22	131									
				-4	132		BUTTON JN. BOX	-23	132									
C34	3C	2.5	PP-PROTECTIVE	1TBC8 -2	166C	8	JPB+HBPBB JOG PUSH	21TBC	166C	8	CXLPE	1	20	20	40	CR12		
			PANEL	-3	166D		BUTTON +HOIST	-10	166D									
							BLOCK PUSH BUTTON											
							BOARD (IN CABIN)											

THIS IS PART OF TECHNICAL SPECIFICATION PE-TS-437-501-A001A REV 0

Job: OG - 06		**Customer: BHARAT HEAVY ELECTRICAL LTD**																
Crane: OG-06/250-50-10Tx21M SPAN POWER HOUSE CRANE (CRANE-1 & CRANE-2)							**Ref Drg No.Electrical Layout**					**Prepd. by: RA**		**Rev. No.**	**1**			
TITLE : Cable Schedule							**CONTRACTOR :**					**Ref-FAFECO Drg. N**		**OG-06/250-50-10Tx21M/201**				
FAFECO DRG NO. OG-06/250-50-10Tx21M/212							**Checked by : AGG**					**Ref-BHEL Drg. No.**		**PE-V0-437-501 -A51 7**				
code CXLPE= XLPE Insulated Armoured stranded copper conductor cable 1.1 KV Grade as per IS 7098-Part1-1988																		
code AXLPE= XLPE Insulated Armoured stranded Aluminium conductor cable 1.1 KV Grade as per IS 7098-Part1-1988																		
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Code Eth=Ethernet Cable																		
Designation: Prefix for Power cable "P", Control Cable "C", Instrumentation cable "IC", Earthing cable "E" are incorporated																		
Abbrevition: SHT=Reference Sheet No. of schematic drg., FRL=Ferrule, CR1=applicable for Crane 1 only, CR2=Applicable for Crane 2 only, CR12=Applicable for Crane 1 as well as Crane 2, CRC= Common for both Cranes																		
CTF=Cross Travel Festoon, MRHF=Monorail Hoist Festoon, CPBSF=Crane Push Button Station Festoon, HPBSF=Hoist Block Push Button Station Festoon, E-CABLE= Encoder Cable																		
CABLE	**LE DETAILS**		**FROM**				**TO**				**CABLE**	**NO OF**	**RUN**	**REQD**	**Proj-Qty**	**Qty-A/C**	**REMARK**	
NO	**CORES**	**SIZE**	**FROM EQUIPMENT**	**T.B.**	**FRL**	**SHT**	**TO EQUIPMENT**	**T.B.**	**FRL**	**SHT**	**CODE**	**CABLES**	**LENGTH**	**LENGTH**	**2**			
	NO.	**SQ MM**		**GROUP NO**	**NO**	**Nos**		**GROUP NO**	**NO**	**Nos**		**RUN**	**IN MTR**	**IN MTR**	**cranes**			
C35	7C	2.5	PP-PROTECTIVE	1TBC1 -2	23	4	TRB2- TRASN. BOX-2	TR2A	23	4	CXLPE	1	15.5	15.5	31	CR12		
			PANEL	-3	24		(TR21, TR2B)	-24V	24									
				-4	25		LIGHTING	-240V	25									
				-5	23A		TRANSFORMER	TR2B	23A									
				-6	24A			-24V	24A									
				-7	25A			-240V	25A									
C36	3C	2.5	PP-PROTECTIVE	1TBC1 -9	55	10	MHP-MAIN HOIST	2TBC	55	16	CXLPE	1	15	15	30	CR12		
			PANEL	-20	57B		PANEL	-3	57B									
				-32	58			-4	58									
C37	3C	2.5	PP-PROTECTIVE	1TBC1 -10	55	10	AHP-AUX. HOIST	3TBC	55	24	CXLPE	1	14	14	28	CR12		
			PANEL	-21	57B		PANEL	-3	57B									
				-33	58			-4	58									
C38	3C	2.5	PP-PROTECTIVE	1TBC1 -11	55	31	CTP-CROSS TRAVEL	4TBC	55	31	CXLPE	1	13	13	26	CR12		
			PANEL	-22	57B		PANEL	-3	57B									
				-34	58			-4	58									
C39	3C	2.5	PP-PROTECTIVE	1TBC1 -12	55	10	LTP-LONG TRAVEL	5TBC	55	38	CXLPE	1	12.5	12.5	25	CR12		
			PANEL	-23	57B		PANEL	-3	57B									
				-35	58			-4	58									
C40	3C	2.5	PP-PROTECTIVE	1TBC1 -13	55	10	PLCP-PLC PANEL	6TBC	55	45	CXLPE	1	11.5	11.5	23	CR12		
			PANEL	-24	57B			-3	57B									
				-36	58			-4	58									
C41	3C	2.5	PP-PROTECTIVE	1TBC1 -14	55	10	MRHP- MONO RAIL	7TBC	55	49	CXLPE	1	11	11	22	CR12		
			PANEL	-25	57B		HOIST PANEL	-3	57B									
				-37	58			-4	58									
C42	3C	2.5	PP-PROTECTIVE	1TBC1 -19	55	10	DGJB1-DRIVE GRIDER	30TBC	55	10	CXLPE	1	19	19	38	CR12		
			PANEL	-30	57B		JN. BOX. (PS1)	-3	57B									

THIS IS PART OF TECHNICAL SPECIFICATION PE-TS-437-501-A001A REV 0

Job: OG - 06		**Customer: BHARAT HEAVY ELECTRICAL LTD**																
Crane: OG-06/250-50-10Tx21M SPAN POWER HOUSE CRANE (CRANE-1 & CRANE-2)							**Ref Drg No.Electrical Layout**					**Prepd. by: RA**		**Rev. No.**	**1**			
TITLE : Cable Schedule							**CONTRACTOR :**					**Ref-FAFECO Drg. N**		**OG-06/250-50-10Tx21M/201**				
FAFECO DRG NO. OG-06/250-50-10Tx21M/212							**Checked by : AGG**					**Ref-BHEL Drg. No.**		**PE-V0-437-501 -A51 7**				
code CXLPE= XLPE Insulated Armoured stranded copper conductor cable 1.1 KV Grade as per IS 7098-Part1-1988																		
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Code RS-485 = Local networks and multidrop communications links																		
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Designation: Prefix for Power cable "P", Control Cable "C", Instrumentation cable "IC", Earthing cable "E" are incorporated																		
Abbrevition: SHT=Reference Sheet No. of schematic drg., FRL=Ferrule, CR1=applicable for Crane 1 only, CR2=Applicable for Crane 2 only, CR12=Applicable for Crane 1 as well as Crane 2, CRC= Common for both Cranes																		
CTF=Cross Travel Festoon, MRHF=Monorail Hoist Festoon, CPBSF=Crane Push Button Station Festoon, HPBSF=Hoist Block Push Button Station Festoon, E-CABLE= Encoder Cable																		

CABLE	LE DETAILS		FROM				TO				CABLE	NO OF	RUN	REQD	Proj-Qty	Qty-A/C	REMARK
NO	CORES	SIZE	FROM EQUIPMENT	T.B.	FRL	SHT	TO EQUIPMENT	T.B.	FRL	SHT	CODE	CABLES	LENGTH	LENGTH	2		
	NO.	SQ MM		GROUP NO	NO	Nos		GROUP NO	NO	Nos		RUN	IN MTR	IN MTR	cranes		
C43	3C	2.5	PP-PROTECTIVE	1TBC1 -19	55	10	DGJB2-DRIVE GRIDER	16TBC	55	10	CXLPE	1	19	19	38	CR12	
			PANEL	-30	57B		JN. BOX. (PS2)	-3	57B								
C44	3C	2.5	PP-PROTECTIVE	1TBC1 -17	55	10	PB+LDB-PUSH	13TBC	55	10	CXLPE	1	25	25	50	CR12	
			PANEL	-28	57B		BUTTON + LIGHTING	-38	57B								
							DISTRIBUTION										
							BOARD (IN CABIN)										
C45	3C	2.5	PP-PROTECTIVE	1TBC1 -16	55	10	IGJB1-IDLE GRIDER	17TBC	55	10	CXLPE	1	6	6	12	CR12	
			PANEL	-27	57B		JN. BOX. (PS3)	-3	57B								
C46	3C	2.5	PP-PROTECTIVE	1TBC1 -16	55	10	IGJB2-IDLE GRIDER	31TBC	55	10	CXLPE	1	6	6	12	CR12	
			PANEL	-27	57B		JN. BOX. (PS4)	-3	57B								
C47	3C	2.5	PP-PROTECTIVE	1TBC1 -40	57B	10	UBLJB1-UNDER	18TBC	57B	10	CXLPE	1	18	18	36	CR12	
			PANEL	-42	68		BRIDGE LIGHT JN.	-3	68								
							BOX-1										
C48	3C	2.5	PP-PROTECTIVE	1TBC1 -41	57B	10	UBLJB2-UNDER	19TBC	57B	10	CXLPE	1	5	5	10	CR12	
			PANEL	-43	69		BRIDGE LIGHT JN.	-3	69								
							BOX-2										
C49	3C	2.5	PP-PROTECTIVE	1TBC1 -45	020	10	JBG- JN. BOX ON	11TBC	020	10	CXLPE	1	30	30	60	CR12	
			PANEL	-46	021		GRIDER	-25	021								
							2m-SP. HEATER										
C50	3C	2.5	PP-PROTECTIVE	1TBC1 -47	030	10	JBG- JN. BOX ON	11TBC	030	23	CXLPE	1	30	30	60	CR12	
			PANEL	-48	031		GRIDER	-27	031								
							3m-SP. HEATER										
C51	3C	2.5	PB+LDB-PUSH	13TBC -45	55	10	CJB-1 CABIN JN. BOX	28TBC	55	10	CXLPE	1	20	20	40	CR12	
			BUTTON + LIGHTING	-38	57B		PS5	-3	57B								
			DISTRIBUTION														
			BOARD (IN CABIN)														

THIS IS PART OF TECHNICAL SPECIFICATION PE-TS-437-501-A001A REV 0

Job: OG - 06		**Customer: BHARAT HEAVY ELECTRICAL LTD**																
Crane: OG-06/250-50-10Tx21M SPAN POWER HOUSE CRANE (CRANE-1 & CRANE-2)						**Ref Drg No.Electrical Layout**					**Prepd. by: RA**		**Rev. No.**	**1**				
TITLE : Cable Schedule						**CONTRACTOR :**					**Ref-FAFECO Drg. N**		**OG-06/250-50-10Tx21M/201**					
FAFECO DRG NO. OG-06/250-50-10Tx21M/212						**Checked by : AGG**					**Ref-BHEL Drg. No.**		**PE-V0-437-501 -A51 7**					
code CXLPE= XLPE Insulated Armoured stranded copper conductor cable 1.1 KV Grade as per IS 7098-Part1-1988																		
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Designation: Prefix for Power cable "P", Control Cable "C", Instrumentation cable "IC", Earthing cable "E" are incorporated																		
Abbrevition: SHT=Reference Sheet No. of schematic drg., FRL=Ferrule, CR1=applicable for Crane 1 only, CR2=Applicable for Crane 2 only, CR12=Applicable for Crane 1 as well as Crane 2, CRC= Common for both Cranes																		
CTF=Cross Travel Festoon, MRHF=Monorail Hoist Festoon, CPBSF=Crane Push Button Station Festoon, HPBSF=Hoist Block Push Button Station Festoon, E-CABLE= Encoder Cable																		
CABLE	**LE DETAILS**		**FROM**				**TO**				**CABLE**	**NO OF**	**RUN**	**REQD**	**Proj-Qty**	**Qty-A/C**	**REMARK**	
NO	**CORES**	**SIZE**	**FROM EQUIPMENT**	**T.B.**	**FRL**	**SHT**	**TO EQUIPMENT**	**T.B.**	**FRL**	**SHT**	**CODE**	**CABLES**	**LENGTH**	**LENGTH**	**2**			
	NO.	**SQ MM**		**GROUP NO**	**NO**	**Nos**		**GROUP NO**	**NO**	**Nos**		**RUN**	**IN MTR**	**IN MTR**	**cranes**			
C52	3C	2.5	PB+LDB-PUSH	13TBC -45	55	10	CJB-2 CABIN JN. BOX	32TBC	55	10	CXLPE	1	20	20	40	CR12		
			BUTTON + LIGHTING	-38	57B		PS6	-3	57B									
			DISTRIBUTION															
			BOARD (IN CABIN)															
C53	3C	2.5	PB+LDB-PUSH	13TBC -39	57B	10	CF-CABIN FAN	CF	57B	10	CEPRF	1	5	5	10	CR12		
			BUTTON + LIGHTING	-46	62			-2	62									
			DISTRIBUTION															
			BOARD (IN CABIN)															
C54	3C	2.5	PB+LDB-PUSH	13TBC -40	57B	10	EF-EXHAUST FAN	EF	57B	10	CEPRF	1	6	6	12	CR12		
			BUTTON + LIGHTING	-47	63													
			DISTRIBUTION															
			BOARD (IN CABIN)															
C55	3C	2.5	PB+LDB-PUSH	13TBC -41	57B	10	CL1-2- CABIN	CL	57B	10	CEPRF	1	5	5	10	CR12		
			BUTTON + LIGHTING	-48	64		LIGHT 1/2	-2	64									
			DISTRIBUTION															
			BOARD (IN CABIN)															
C56	3C	2.5	PB+LDB-PUSH	13TBC -42	57B	10	SCL-STAIR CASE	SCL	57B	10	CEPRF	1	7	7	14	CR12		
			BUTTON + LIGHTING	-49	65		LIGHT	-2	65									
			DISTRIBUTION															
			BOARD (IN CABIN)															
C57	3C	2.5	PB+LDB-PUSH	13TBC -43	57B	10	BL1-BRIDGE LIGHT-1	BL1	57B	10	CXLPE	1	8	8	16	CR12		
			BUTTON + LIGHTING	-50	66			-2	66									
			DISTRIBUTION															
			BOARD (IN CABIN)															
C58	3C	2.5	BL1-BRIDGE LIGHT-1	BL1 -1	57B	10	BL2-BRIDGE LIGHT-2	BL2	57B	10	CXLPE	1	30	30	60	CR12		
				-2	66			-2	66									
C59	3C	2.5	PB+LDB-PUSH	13TBC -44	57B	10	BL3-BRIDGE LIGHT-3	BL3	57B	10	CXLPE	1	20	20	40	CR12		

THIS IS PART OF TECHNICAL SPECIFICATION PE-TS-437-501-A001A REV 0

Job: OG - 06		**Customer: BHARAT HEAVY ELECTRICAL LTD**																
Crane: OG-06/250-50-10Tx21M SPAN POWER HOUSE CRANE (CRANE-1 & CRANE-2)						**Ref Drg No.Electrical Layout**					**Prepd. by: RA**		**Rev. No.**	**1**				
TITLE : Cable Schedule						**CONTRACTOR :**					**Ref-FAFECO Drg. N**		**OG-06/250-50-10Tx21M/201**					
FAFECO DRG NO. OG-06/250-50-10Tx21M/212						**Checked by : AGG**					**Ref-BHEL Drg. No.**		**PE-V0-437-501 -A51 7**					
code CXLPE= XLPE Insulated Armoured stranded copper conductor cable 1.1 KV Grade as per IS 7098-Part1-1988																		
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CABLE	**LE DETAILS**		**FROM**				**TO**				**CABLE**	**NO OF**	**RUN**	**REQD**	**Proj-Qty**	**Qty-A/C**	**REMARK**	
NO	**CORES**	**SIZE**	**FROM EQUIPMENT**	**T.B.**	**FRL**	**SHT**	**TO EQUIPMENT**	**T.B.**	**FRL**	**SHT**	**CODE**	**CABLES**	**LENGTH**	**LENGTH**	**2**			
	NO.	**SQ MM**		**GROUP NO**	**NO**	**Nos**		**GROUP NO**	**NO**	**Nos**		**RUN**	**IN MTR**	**IN MTR**	**cranes**			
			BUTTON + LIGHTING	-51	67			-2	67									
			DISTRIBUTION															
			BOARD (IN CABIN)															
C60	3C	2.5	BL3-BRIDGE LIGHT-3	BL3 -1	57B	10	BL4-BRIDGE LIGHT-4	BL4	57B	10	CXLPE	1	42	42	84	CR12		
				-2	67			-2	67									
C61	3C	2.5	UBLJB1- UNDER	18TBC -2	57B	10	UBL1- UNDER BRIDGE	UBL1	57B	10	CXLPE	1	15	15	30	CR12		
			BRIDGE LIGHT	-3	68		LIGHT-1	-2	68									
			JN. BOX-1															
C62	3C	2.5	UBLJB1- UNDER	18TBC -2	57B	10	UBL2- UNDER BRIDGE	UBL2	57B	10	CXLPE	1	20	20	40	CR12		
			BRIDGE LIGHT	-3	68		LIGHT-2	-2	68									
			JN. BOX-1															
C63	3C	2.5	UBLJB2- UNDER	19TBC -2	57B	10	UBL3- UNDER BRIDGE	UBL4	57B	10	CXLPE	1	15	15	30	CR12		
			BRIDGE LIGHT	-3	69		LIGHT-3	-2	69									
			JN. BOX-2															
C64	3C	2.5	UBLJB2- UNDER	19TBC -2	57B	10	UBL4- UNDER BRIDGE	UBL4	57B	10	CXLPE	1	20	20	40	CR12		
			BRIDGE LIGHT	-3	69		LIGHT-4	-2	69									
			JN. BOX-2															
C65	3C	2.5	JBG- JN. BOX ON	11TBC -24	020	15	JBT- JN. BOX ON	12TBC	020	15	CEPRF	1	31	31	62	CR12	CTF	
			GRIDER	-25	021		TROLLEY	-25	021									
			2m-SP. HEATER				2m-SP. HEATER											
C66	3C	2.5	JBG- JN. BOX ON	11TBC -26	030	23	JBT- JN. BOX ON	12TBC	030	23	CEPRF	1	31	31	62	CR12	CTF	
			GRIDER	-27	031		TROLLEY	-27	031									
			3m-SP. HEATER				3m-SP. HEATER											
C67	3C	2.5	JBT- JN. BOX ON	12TBC -24	020	15	2m- M.H. MOTOR	2mSPH	020	15	CXLPE	1	6	6	12	CR12		
			TROLLEY	-25	021		SPACE HEATER	-2	021									
			2m-SP. HEATER															
C68	3C	2.5	JBT- JN. BOX ON	12TBC -26	030	23	3m- A.H. MOTOR	3mSPH	030	23	CXLPE	1	12	12	24	CR12		

THIS IS PART OF TECHNICAL SPECIFICATION PE-TS-437-501-A001A REV 0

Job: OG - 06		**Customer: BHARAT HEAVY ELECTRICAL LTD**																
Crane: OG-06/250-50-10Tx21M SPAN POWER HOUSE CRANE (CRANE-1 & CRANE-2)							**Ref Drg No.Electrical Layout**					**Prepd. by: RA**		**Rev. No.**	**1**			
TITLE : Cable Schedule							**CONTRACTOR :**					**Ref-FAFECO Drg. N**		**OG-06/250-50-10Tx21M/201**				
FAFECO DRG NO. OG-06/250-50-10Tx21M/212							**Checked by : AGG**					**Ref-BHEL Drg. No.**		**PE-V0-437-501 -A51 7**				
code CXLPE= XLPE Insulated Armoured stranded copper conductor cable 1.1 KV Grade as per IS 7098-Part1-1988																		
code AXLPE= XLPE Insulated Armoured stranded Aluminium conductor cable 1.1 KV Grade as per IS 7098-Part1-1988																		
Code CEPRF= EPR Insulated PCP Rubber stranded conductor cable 1.1 KV Grade as per IS 9968																		
Code RS-485 = Local networks and multidrop communications links																		
Code CXLPS= XLPE/PVC insulated unarmoured shielded Copper Conductor cable.																		
Code Eth=Ethernet Cable																		
Designation: Prefix for Power cable "P", Control Cable "C", Instrumentation cable "IC", Earthing cable "E" are incorporated																		
Abbrevition: SHT=Reference Sheet No. of schematic drg., FRL=Ferrule, CR1=applicable for Crane 1 only, CR2=Applicable for Crane 2 only, CR12=Applicable for Crane 1 as well as Crane 2, CRC= Common for both Cranes																		
CTF=Cross Travel Festoon, MRHF=Monorail Hoist Festoon, CPBSF=Crane Push Button Station Festoon, HPBSF=Hoist Block Push Button Station Festoon, E-CABLE= Encoder Cable																		
CABLE	**LE DETAILS**		**FROM**				**TO**				**CABLE**	**NO OF**	**RUN**	**REQD**	**Proj-Qty**	**Qty-A/C**	**REMARK**	
NO	**CORES**	**SIZE**	**FROM EQUIPMENT**	**T.B.**	**FRL**	**SHT**	**TO EQUIPMENT**	**T.B.**	**FRL**	**SHT**	**CODE**	**CABLES**	**LENGTH**	**LENGTH**	**2**			
	NO.	**SQ MM**		**GROUP NO**	**NO**	**Nos**		**GROUP NO**	**NO**	**Nos**		**RUN**	**IN MTR**	**IN MTR**	**cranes**			
			TROLLEY	-27	031		SPACE HEATER	-2	031									
			3m-SP. HEATER															
C69	3C	2.5	PP-PROTECTIVE	1TBC1 -36	56	10	DGJB1-DRIVE GRIDER	30TBC	56	10	CXLPE	1	19	19	38	CR12		
			PANEL	-38	57D		JN. BOX. (HL1)	-5	57D									
C70	3C	2.5	PP-PROTECTIVE	1TBC1 -37	56	10	CJB-1 CABIN JN. BOX	28TBC	56	10	CXLPE	1	20	20	40	CR12		
			PANEL	-39	57D		HL2	-5	57D									
C71	7C	2.5	MHP -MAIN HOIST	2TBC -14	271	18	2b1- M.H. MASTER	2b1	271	18	CXLPE	1	19	19	38	CR12		
			PANEL	-15	272		CONTROLLER	-03	272									
				-16	273		(IN CABIN)	-05	273									
				-17	274			-02	274									
				-18	275			-04	275									
				-19	276			-06	276									
C72	7C	2.5	MHP -MAIN HOIST	2TBC -21	271A	18	CPBSJB-CRANE P.B.	14TBC	271A	18	CXLPE	1	23	23	46	CR12		
			PANEL	-22	272A		STATION JN. BOX.	-17	272A									
				-23	273A		(ON BRIDGE)	-18	273A									
				-24	275A			-19	275A									
				-25	276A			-20	276A									
C73	7C	2.5	MHP -MAIN HOIST	2TBC -27	271B	18	RRJB-RADIO REMOTE	15TBC	271B	18	CXLPE	1	15	15	30	CR12		
			PANEL	-28	272B		JN. BOX.	-11	272B									
				-29	273B		(ON BRIDGE)	-12	273B									
				-30	276B			-13	276B									
C74	7C	2.5	MHP -MAIN HOIST	2TBC -32	282	18	JBG- JN. BOX ON	11TBC	282	18	CXLPE	1	20	20	40	CR12		
			PANEL	-33	283		GRIDER	-7	283									
				-34	284		(2LS2)	-8	284									
				-35	285			-9	285									
C75	3C	2.5	MHP -MAIN HOIST	2TBC -37	266	17	JPB+HBPBB JOG PUSH	21TBC	266	17	CXLPE	1	20	20	40	CR12		
			PANEL	-38	267		BUTTON +HOIST	-12	267									
							BLOCK PUSH BUTTON											
							BOARD(ACCESS)											

THIS IS PART OF TECHNICAL SPECIFICATION PE-TS-437-501-A001A REV 0

Job: OG - 06		**Customer: BHARAT HEAVY ELECTRICAL LTD**																
Crane: OG-06/250-50-10Tx21M SPAN POWER HOUSE CRANE (CRANE-1 & CRANE-2)							**Ref Drg No.Electrical Layout**					**Prepd. by: RA**		**Rev. No.**	**1**			
TITLE : Cable Schedule							**CONTRACTOR :**					**Ref-FAFECO Drg. N**		**OG-06/250-50-10Tx21M/201**				
FAFECO DRG NO. OG-06/250-50-10Tx21M/212							**Checked by : AGG**					**Ref-BHEL Drg. No.**		**PE-V0-437-501 -A51 7**				
code CXLPE= XLPE Insulated Armoured stranded copper conductor cable 1.1 KV Grade as per IS 7098-Part1-1988																		
code AXLPE= XLPE Insulated Armoured stranded Aluminium conductor cable 1.1 KV Grade as per IS 7098-Part1-1988																		
Code CEPRF= EPR Insulated PCP Rubber stranded conductor cable 1.1 KV Grade as per IS 9968																		
Code RS-485 = Local networks and multidrop communications links																		
Code CXLPS= XLPE/PVC insulated unarmoured shielded Copper Conductor cable.																		
Code Eth=Ethernet Cable																		
Designation: Prefix for Power cable "P", Control Cable "C", Instrumentation cable "IC", Earthing cable "E" are incorporated																		
Abbrevition: SHT=Reference Sheet No. of schematic drg., FRL=Ferrule, CR1=applicable for Crane 1 only, CR2=Applicable for Crane 2 only, CR12=Applicable for Crane 1 as well as Crane 2, CRC= Common for both Cranes																		
CTF=Cross Travel Festoon, MRHF=Monorail Hoist Festoon, CPBSF=Crane Push Button Station Festoon, HPBSF=Hoist Block Push Button Station Festoon, E-CABLE= Encoder Cable																		
CABLE	**LE DETAILS**		**FROM**				**TO**					**CABLE**	**NO OF**	**RUN**	**REQD**	**Proj-Qty**	**Qty-A/C**	**REMARK**
NO	**CORES**	**SIZE**	**FROM EQUIPMENT**	**T.B.**	**FRL**	**SHT**	**TO EQUIPMENT**	**T.B.**	**FRL**	**SHT**		**CODE**	**CABLES**	**LENGTH**	**LENGTH**	**2**		
	NO.	**SQ MM**		**GROUP NO**	**NO**	**Nos**		**GROUP NO**	**NO**	**Nos**			**RUN**	**IN MTR**	**IN MTR**	**cranes**		
C76	3C	2.5	MHP -MAIN HOIST	2TBC -40	670B	45	PLCP-PLC PANEL	6TBC	670B	45		CXLPE	1	7	7	14	CR12	
			PANEL	-41	682			-35	682									
C77	7C	2.5	MHP -MAIN HOIST	20TBC -2	251	20	RRJB-RADIO REMOTE	15TBC	251	20		CXLPE	1	15	15	30	CR12	
			PANEL	-3	221		JN. BOX	-31	221									
				-4	222		(ON BRIDGE)	-32	222									
				-5	223			-33	223									
				-6	224			-34	224									
C78	7C	2.5	MHP -MAIN HOIST	20TBC -8	226	20	LBDB- LIFTING BEAM	27TBC	226	20		CXLPE	1	20	20	40	CR12	
			PANEL	-9	227		DISTRIBUTION BOARD	-3	227									
				-10	228		(IN CABIN)	-4	228									
				-11	229			-5	229									
				-12	230			-6	230									
				-13	250			-7	250									
C79	7C	2.5	MHP -MAIN HOIST	20TBC -15	226	20	PJB-PLUG JN. BOX.	25TBC	226	20		CXLPE	1	21	21	21	CR1	
			PANEL	-16	227			-13	227									
				-17	228		(ON BRIDGE)	-14	228									
				-18	229			-15	229									
				-19	230			-16	230									
				-20	231			-17	231									
				-21	250			-18	250									
C80	7C	2.5	MHP -MAIN HOIST	20TBC -15	226	20A	SJB-SOCKET JN. BOX.	25TBC	226	20A		CXLPE	1	21	21	21	CR2	
			PANEL	-16	227			-13	227									
				-17	228		(ON BRIDGE)	-14	228									
				-18	229			-15	229									
				-19	230			-16	230									
				-20	231			-17	231									
				-21	250			-18	250									
C81	10C	2.5	JBG- JN BOX ON	11TBC -6	282	18	JBT -JN. BOX ON	12TBC	282	18		CEPRF	1	31	31	62	CR12	CTF

THIS IS PART OF TECHNICAL SPECIFICATION PE-TS-437-501-A001A REV 0

Job: OG - 06		**Customer: BHARAT HEAVY ELECTRICAL LTD**																
Crane: OG-06/250-50-10Tx21M SPAN POWER HOUSE CRANE (CRANE-1 & CRANE-2)						**Ref Drg No.Electrical Layout**				**Prepd. by: RA**		**Rev. No.**	**1**					
TITLE : Cable Schedule						**CONTRACTOR :**				**Ref-FAFECO Drg. N**		**OG-06/250-50-10Tx21M/201**						
FAFECO DRG NO. OG-06/250-50-10Tx21M/212						**Checked by : AGG**				**Ref-BHEL Drg. No.**		**PE-V0-437-501 -A51 7**						
code CXLPE= XLPE Insulated Armoured stranded copper conductor cable 1.1 KV Grade as per IS 7098-Part1-1988																		
code AXLPE= XLPE Insulated Armoured stranded Aluminium conductor cable 1.1 KV Grade as per IS 7098-Part1-1988																		
Code CEPRF= EPR Insulated PCP Rubber stranded conductor cable 1.1 KV Grade as per IS 9968																		
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Designation: Prefix for Power cable "P", Control Cable "C", Instrumentation cable "IC", Earthing cable "E" are incorporated																		
Abbrevition: SHT=Reference Sheet No. of schematic drg., FRL=Ferrule, CR1=applicable for Crane 1 only, CR2=Applicable for Crane 2 only, CR12=Applicable for Crane 1 as well as Crane 2, CRC= Common for both Cranes																		
CTF=Cross Travel Festoon, MRHF=Monorail Hoist Festoon, CPBSF=Crane Push Button Station Festoon, HPBSF=Hoist Block Push Button Station Festoon, E-CABLE= Encoder Cable																		
CABLE	**LE DETAILS**		**FROM**				**TO**				**CABLE**	**NO OF**	**RUN**	**REQD**	**Proj-Qty**	**Qty-A/C**	**REMARK**	
NO	**CORES**	**SIZE**	**FROM EQUIPMENT**	**T.B.**	**FRL**	**SHT**	**TO EQUIPMENT**	**T.B.**	**FRL**	**SHT**	**CODE**	**CABLES**	**LENGTH**	**LENGTH**	**2**			
	NO.	**SQ MM**		**GROUP NO**	**NO**	**Nos**		**GROUP NO**	**NO**	**Nos**		**RUN**	**IN MTR**	**IN MTR**	**cranes**			
			GRIDER (2LS2)	-7	283		TROLLEY	-7	283									
				-8	284		(2LS2)	-8	284									
				-9	285			-9	285									
				-10	670			-10	670									
				-11	670			-11	670									
				-12	673			-12	673									
				-13	674			-13	674									
C82	10C	2.5	JBT -JN. BOX ON	12TBC -6	282	18	2LS2- MAIN HOIST	2LS2	282	18	CXLPE	1	13	13	26	CR12		
			TROLLEY	-7	283		ROTARY LIMIT	-3	283									
			(2LS2)	-8	284		SWITCH	-2	284									
				-9	285			-4	285									
				-10	670			-5	670									
				-11	670			-7	670									
				-12	673			-6	673									
				-13	674			-8	674									
C83	3C	2.5	MHP -MAIN HOIST	2TBC -47	251	16	MH/AH SUM DISPLAY		251	16	CXLPE	1	8	8	16	CR12		
			PANEL	-48	250		ON BRIDGE		250									
							(LOADCELL)											
C84	3C	2.5	MHP -MAIN HOIST	2TBC -43	234	16	LCP -LOAD CELL	LCP	234	16	CXLPE	1	25	25	50	CR12		
			PANEL	-44	235		PANEL		235									
							(IN CABIN)											
C85	3C	2.5	MHP -MAIN HOIST	2TBC -45	272A	16	LCP -LOAD CELL	LCP	272A	16	CXLPE	1	25	25	50	CR12		
			PANEL	-46	282		PANEL	-2	282									
							(IN CABIN)											
C86	7C	2.5	AHP -AUX. HOIST	3TBC -14	371	26	3b1- A.H. MASTER	3b1	371	26	CXLPE	1	20	20	40	CR12		
			PANEL	-15	372		CONTROLLER	-03	372									
				-16	373		(IN CABIN)	-05	373									
				-17	374			-02	374									
				-18	375			-04	375									

THIS IS PART OF TECHNICAL SPECIFICATION PE-TS-437-501-A001A REV 0

Job: OG - 06		**Customer: BHARAT HEAVY ELECTRICAL LTD**																
Crane: OG-06/250-50-10Tx21M SPAN POWER HOUSE CRANE (CRANE-1 & CRANE-2)							**Ref Drg No.Electrical Layout**					**Prepd. by: RA**		**Rev. No.**	**1**			
TITLE : Cable Schedule							**CONTRACTOR :**					**Ref-FAFECO Drg. N**		**OG-06/250-50-10Tx21M/201**				
FAFECO DRG NO. OG-06/250-50-10Tx21M/212							**Checked by : AGG**					**Ref-BHEL Drg. No.**		**PE-V0-437-501 -A51 7**				
code CXLPE= XLPE Insulated Armoured stranded copper conductor cable 1.1 KV Grade as per IS 7098-Part1-1988																		
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Designation: Prefix for Power cable "P", Control Cable "C", Instrumentation cable "IC", Earthing cable "E" are incorporated																		
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CABLE	**LE DETAILS**		**FROM**				**TO**				**CABLE**	**NO OF**	**RUN**	**REQD**	**Proj-Qty**	**Qty-A/C**	**REMARK**	
NO	**CORES**	**SIZE**	**FROM EQUIPMENT**	**T.B.**	**FRL**	**SHT**	**TO EQUIPMENT**	**T.B.**	**FRL**	**SHT**	**CODE**	**CABLES**	**LENGTH**	**LENGTH**	**2**			
	NO.	**SQ MM**		**GROUP NO**	**NO**	**Nos**		**GROUP NO**	**NO**	**Nos**		**RUN**	**IN MTR**	**IN MTR**	**cranes**			
				-19	376			-06	376									
C87	7C	2.5	AHP -AUX. HOIST	3TBC -21	371A	26	CPBSJB-CRANE P.B.	14TBC	371A	26	CXLPE	1	24	24	48	CR12		
			PANEL	-22	372A		STATION JN. BOX.	-23	372A									
				-23	373A		(ON BRIDGE)	-24	373A									
				-24	375A			-25	375A									
				-25	376A			-26	376A									
C88	7C	2.5	AHP -AUX. HOIST	3TBC -27	371B	26	RRJB-RADIO REMOTE	15TBC	371B	26	CXLPE	1	14	14	28	CR12		
			PANEL	-28	372B		JN. BOX.	-16	372B									
				-29	373B		(ON BRIDGE)	-17	373B									
				-30	376B			-18	376B									
C89	7C	2.5	AHP -AUX.HOIST	3TBC -32	382	26	JBG- JN. BOX ON	11TBC	382	26	CXLPE	1	21	21	42	CR12		
			PANEL	-33	383		GRIDER	-16	383									
				-34	384		(3LS2)	-17	384									
				-35	385			-18	385									
C90	3C	2.5	AHP -AUX. HOIST	3TBC -37	366	25	JPB+HBPBB JOG PUSH	21TBC	366	25	CXLPE	1	21	21	42	CR12		
			PANEL	-38	367		BUTTON +HOIST	-14	367									
							BLOCK PUSH BUTTON											
							BOARD (IN CABIN)											
C91	10C	2.5	JBG- JN BOX ON	11TBC -15	382	26	JBT -JN. BOX ON	12TBC	382	26	CEPRF	1	31	31	62	CR12	CTF	
			GRIDER (3LS2)	-16	383		TROLLEY	-16	383									
				-17	384		(3LS2)	-17	384									
				-18	385	26		-18	385	26							CTF	
				-19	370A			-19	370A									
				-20	370A			-20	370A									
				-21	375			-21	375									
				-22	376			-22	376									
C92	10C	2.5	JBT -JN. BOX ON	12TBC -15	382	26	3LS2- AUX. HOIST	3LS2	382	26	CXLPE	1	6	6	12	CR12		
			TROLLEY	-16	383		ROTARY LIMIT	-3	383									
			(3LS2)	-17	384		SWITCH	-2	384									

THIS IS PART OF TECHNICAL SPECIFICATION PE-TS-437-501-A001A REV 0

Job: OG - 06		**Customer: BHARAT HEAVY ELECTRICAL LTD**																
Crane: OG-06/250-50-10Tx21M SPAN POWER HOUSE CRANE (CRANE-1 & CRANE-2)						**Ref Drg No.Electrical Layout**				**Prepd. by: RA**		**Rev. No.**	**1**					
TITLE : Cable Schedule						**CONTRACTOR :**				**Ref-FAFECO Drg. N**		**OG-06/250-50-10Tx21M/201**						
FAFECO DRG NO. OG-06/250-50-10Tx21M/212						**Checked by : AGG**				**Ref-BHEL Drg. No.**		**PE-V0-437-501 -A51 7**						
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CABLE	**LE DETAILS**		**FROM**				**TO**				**CABLE**	**NO OF**	**RUN**	**REQD**	**Proj-Qty**	**Qty-A/C**	**REMARK**	
NO	**CORES**	**SIZE**	**FROM EQUIPMENT**	**T.B.**	**FRL**	**SHT**	**TO EQUIPMENT**	**T.B.**	**FRL**	**SHT**	**CODE**	**CABLES**	**LENGTH**	**LENGTH**	**2**			
	NO.	**SQ MM**		**GROUP NO**	**NO**	**Nos**		**GROUP NO**	**NO**	**Nos**		**RUN**	**IN MTR**	**IN MTR**	**cranes**			
				-18	385			-4	385									
				-19	370A			-5	370A									
				-20	370A			-7	370A									
				-21	375			-6	375									
				-22	376			-8	376									
C93	3C	2.5	AHP -AUX. HOIST	3TBC -40	377A	16	LCP -LOAD CELL	LCP	377A	16	CXLPE	1	26	26	52	CR12		
			PANEL	-41	382		PANEL	-2	382									
							(IN CABIN)											
C94	7C	2.5	CTP -CROSS TRAVEL	4TBC -14	471	33	4b1- C.T. MASTER	4b1	471	33	CXLPE	1	21	21	42	CR12		
			PANEL	-15	472		CONTROLLER	-03	472									
			(4b1)	-16	473		(IN CABIN)	-05	473									
				-17	474			-02	474									
				-18	475			-04	475									
				-19	476			-06	476									
C95	7C	2.5	CTP -CROSS TRAVEL	4TBC -21	471A	33	CPBSJB-CRANE P.B.	14TBC	471A	33	CXLPE	1	25	25	50	CR12		
			PANEL	-22	472A		STATION JN. BOX.	-29	472A									
				-23	473A		(ON BRIDGE)	-30	473A									
				-24	475A			-31	475A									
				-25	476A			-32	476A									
C96	7C	2.5	CTP -CROSS TRAVEL	4TBC -27	471B	33	RRJB-RADIO REMOTE	15TBC	471B	33	CXLPE	1	13	13	26	CR12		
			PANEL	-28	472B		JN. BOX.	-21	472B									
				-29	473B		(ON BRIDGE)	-22	473B									
				-30	476B			-23	476B									
C97	7C	2.5	CTP -CROSS TRAVEL	4TBC -32	482	33	4LS1-CROSS TRAVEL	4LS1	482	33	CXLPE	1	14	14	28	CR12		
			PANEL	-34	484		LIMIT SWITCH-1	-2	484									
			(4LS1)	-40	670A			-5	670A									
				-41	677			-6	677									
C98	7C	2.5	CTP -CROSS TRAVEL	4TBC -33	483	33	4LS2-CROSS TRAVEL	4LS2	483	33	CXLPE	1	14	14	28	CR12		
			PANEL	-35	485		LIMIT SWITCH-2	-4	485									
			(4LS2)	-42	670A		PAGE 28 OF 40	-7	670A									

THIS IS PART OF TECHNICAL SPECIFICATION PE-TS-437-501-A001A REV 0

Job: OG - 06		**Customer: BHARAT HEAVY ELECTRICAL LTD**																
Crane: OG-06/250-50-10Tx21M SPAN POWER HOUSE CRANE (CRANE-1 & CRANE-2)							**Ref Drg No.Electrical Layout**					**Prepd. by: RA**		**Rev. No.**	**1**			
TITLE : Cable Schedule							**CONTRACTOR :**					**Ref-FAFECO Drg. N**		**OG-06/250-50-10Tx21M/201**				
FAFECO DRG NO. OG-06/250-50-10Tx21M/212							**Checked by : AGG**					**Ref-BHEL Drg. No.**		**PE-V0-437-501 -A51 7**				
code CXLPE= XLPE Insulated Armoured stranded copper conductor cable 1.1 KV Grade as per IS 7098-Part1-1988																		
code AXLPE= XLPE Insulated Armoured stranded Aluminium conductor cable 1.1 KV Grade as per IS 7098-Part1-1988																		
Code CEPRF= EPR Insulated PCP Rubber stranded conductor cable 1.1 KV Grade as per IS 9968																		
Code RS-485 = Local networks and multidrop communications links																		
Code CXLPS= XLPE/PVC insulated unarmoured shielded Copper Conductor cable.																		
Code Eth=Ethernet Cable																		
Designation: Prefix for Power cable "P", Control Cable "C", Instrumentation cable "IC", Earthing cable "E" are incorporated																		
Abbrevition: SHT=Reference Sheet No. of schematic drg., FRL=Ferrule, CR1=applicable for Crane 1 only, CR2=Applicable for Crane 2 only, CR12=Applicable for Crane 1 as well as Crane 2, CRC= Common for both Cranes																		
CTF=Cross Travel Festoon, MRHF=Monorail Hoist Festoon, CPBSF=Crane Push Button Station Festoon, HPBSF=Hoist Block Push Button Station Festoon, E-CABLE= Encoder Cable																		
CABLE	**LE DETAILS**		**FROM**				**TO**				**CABLE**	**NO OF**	**RUN**	**REQD**	**Proj-Qty**	**Qty-A/C**	**REMARK**	
NO	**CORES**	**SIZE**	**FROM EQUIPMENT**	**T.B.**	**FRL**	**SHT**	**TO EQUIPMENT**	**T.B.**	**FRL**	**SHT**	**CODE**	**CABLES**	**LENGTH**	**LENGTH**	**2**			
	NO.	**SQ MM**		**GROUP NO**	**NO**	**Nos**		**GROUP NO**	**NO**	**Nos**		**RUN**	**IN MTR**	**IN MTR**	**cranes**			
				-43	678			-8	678									
C99	3C	2.5	CTP -CROSS TRAVEL	4TBC -37	466	32	JPB+HBPBB JOG PUSH	21TBC	466	32	CXLPE	1	22	22	44	CR12		
			PANEL	-38	467		BUTTON +HOIST	-16	467									
							BLOCK PUSH BUTTON											
							BOARD (IN CABIN)											
C100	7C	2.5	CTP -CROSS TRAVEL	4TBC -40	670A		PLCP-PLC PANEL	6TBC	670A		CXLPE	1	5	5	10	CR12		
			PANEL	-41	677			-25	677									
				-42	670A			-24	670A									
				-43	678			-26	678									
C101	7C	2.5	LTP -LONG TRAVEL	5TBC -14	571	40	5b1- L.T. MASTER	5b1	571	40	CXLPE	1	22	22	44	CR12		
			PANEL	-15	572		CONTROLLER	-03	572									
			(5b1)	-16	573		(IN CABIN)	-05	573									
				-17	574			-02	574									
				-18	575			-04	575									
				-19	576			-06	576									
C102	7C	2.5	LTP -LONG TRAVEL	5TBC -21	571A	40	CPBSJB-CRANE P.B.	14TBC	571A	40	CXLPE	1	26	26	52	CR12		
			PANEL	-22	572A		STATION JN. BOX.	-35	572A									
				-23	573A		(ON BRIDGE)	-36	573A									
				-24	575A			-37	575A									
				-25	576A			-38	576A									
C103	7C	2.5	LTP -LONG TRAVEL	5TBC -27	571B	40	RRJB-RADIO REMOTE	15TBC	571B	40	CXLPE	1	14	14	28	CR12		
			PANEL	-28	572B		JN. BOX.	-26	572B									
				-29	573B		(ON BRIDGE)	-27	573B									
				-30	576B			-28	576B									
C104	7C	2.5	LTP -LONG TRAVEL	5TBC -42	568A	39	5LAC1- L.T. LEFT SIDE	5LAC1	568A	39	CXLPE	1	25	25	50	CR12		
			PANEL	-43	568B		ANTI-COLLISION	-3	568B									
			(5LAC1)	-40	551		DEVICE	-4	568B									
				-40	551			-1	551									

THIS IS PART OF TECHNICAL SPECIFICATION PE-TS-437-501-A001A REV 0

Job: OG - 06		**Customer: BHARAT HEAVY ELECTRICAL LTD**																
Crane: OG-06/250-50-10Tx21M SPAN POWER HOUSE CRANE (CRANE-1 & CRANE-2)							**Ref Drg No.Electrical Layout**					**Prepd. by: RA**		**Rev. No.**	**1**			
TITLE : Cable Schedule							**CONTRACTOR :**					**Ref-FAFECO Drg. N**		**OG-06/250-50-10Tx21M/201**				
FAFECO DRG NO. OG-06/250-50-10Tx21M/212							**Checked by : AGG**					**Ref-BHEL Drg. No.**		**PE-V0-437-501 -A51 7**				
code CXLPE= XLPE Insulated Armoured stranded copper conductor cable 1.1 KV Grade as per IS 7098-Part1-1988																		
code AXLPE= XLPE Insulated Armoured stranded Aluminium conductor cable 1.1 KV Grade as per IS 7098-Part1-1988																		
Code CEPRF= EPR Insulated PCP Rubber stranded conductor cable 1.1 KV Grade as per IS 9968																		
Code RS-485 = Local networks and multidrop communications links																		
Code CXLPS= XLPE/PVC insulated unarmoured shielded Copper Conductor cable.																		
Code Eth=Ethernet Cable																		
Designation: Prefix for Power cable "P", Control Cable "C", Instrumentation cable "IC", Earthing cable "E" are incorporated																		
Abbrevition: SHT=Reference Sheet No. of schematic drg., FRL=Ferrule, CR1=applicable for Crane 1 only, CR2=Applicable for Crane 2 only, CR12=Applicable for Crane 1 as well as Crane 2, CRC= Common for both Cranes																		
CTF=Cross Travel Festoon, MRHF=Monorail Hoist Festoon, CPBSF=Crane Push Button Station Festoon, HPBSF=Hoist Block Push Button Station Festoon, E-CABLE= Encoder Cable																		
CABLE	**LE DETAILS**		**FROM**				**TO**				**CABLE**	**NO OF**	**RUN**	**REQD**	**Proj-Qty**	**Qty-A/C**	**REMARK**	
NO	**CORES**	**SIZE**	**FROM EQUIPMENT**	**T.B.**	**FRL**	**SHT**	**TO EQUIPMENT**	**T.B.**	**FRL**	**SHT**	**CODE**	**CABLES**	**LENGTH**	**LENGTH**	**2**			
	NO.	**SQ MM**		**GROUP NO**	**NO**	**Nos**		**GROUP NO**	**NO**	**Nos**		**RUN**	**IN MTR**	**IN MTR**	**cranes**			
				-41	550			-2	550									
C105	7C	2.5	LTP -LONG TRAVEL	5TBC -33	583	40	5LS2-L.T. RIGHT SIDE	5LS2	583	40	CXLPE	1	17	17	34	CR12		
			PANEL	-35	585		LEVER LIMIT SWITCH	-2	585									
			(5LS2)															
C106	3C	2.5	LTP -LONG TRAVEL	5TBC -37	566	39	JPB+HBPBB JOG PUSH	21TBC	566	39	CXLPE	1	23	23	46	CR12		
			PANEL	-38	567		BUTTON +HOIST	-18	567									
							BLOCK PUSH BUTTON											
							BOARD (IN CABIN)											
C107	3C	2.5	LTP -LONG TRAVEL	5TBC -45	568C	39	5H1- ELECT. HOOTER	5H1	568C	39	CXLPE	1	26	26	52	CR12		
			PANEL	-46	550		FOR ANTI-COLLISION	-2	550									
			(5H1)				DEVICE											
							(OUTSIDE CABIN)											
C108	3C	2.5	PLCP- PLC PANEL	6TBC -8	651A	45	LBDB- LIFTING BEAM	27TBC	651A	45	CXLPE	1	24	24	48	CR12		
				-9	650		DISTRIBUTION BOARD	-10	650									
							(IN CABIN)											
C109	3C	2.5	PLCP- PLC PANEL	6TBC -16	670	45	JBG- JN. BOX ON	11TBC	670	45	CXLPE	1	25	25	50	CR12		
				-17	673		GRIDER	-12	673									
				-18	674		(2LS2)	-13	674									
C110	3C	2.5	PLCP- PLC PANEL	6TBC -20	670A	45	JBG- JN. BOX ON	11TBC	670A	45	CXLPE	1	25	25	50	CR12		
				-21	675		GRIDER	-21	675									
				-22	676		(3LS2)	-22	676									
C111	3C	2.5	PLCP- PLC PANEL	6TBC -28	670B	45	5LS2-L.T. RIGHT SIDE	5LS2	670B	45	CXLPE	1	4	4	8	CR12		
				-29	680		LEVER LIMIT SWITCH	-4	680									
C112	3C	2.5	PLCP- PLC PANEL	6TBC -31	670B	45	PB+LDB- PUSH	13TBC	670B	45	CXLPE	1	24	24	48	CR12		
				-32	681		BUTTON + LIGHTING	-31	681									

THIS IS PART OF TECHNICAL SPECIFICATION PE-TS-437-501-A001A REV 0

Job: OG - 06		**Customer: BHARAT HEAVY ELECTRICAL LTD**																
Crane: OG-06/250-50-10Tx21M SPAN POWER HOUSE CRANE (CRANE-1 & CRANE-2)							**Ref Drg No.Electrical Layout**					**Prepd. by: RA**		**Rev. No.**	**1**			
TITLE : Cable Schedule							**CONTRACTOR :**					**Ref-FAFECO Drg. N**		**OG-06/250-50-10Tx21M/201**				
FAFECO DRG NO. OG-06/250-50-10Tx21M/212							**Checked by : AGG**					**Ref-BHEL Drg. No.**		**PE-V0-437-501 -A51 7**				
code CXLPE= XLPE Insulated Armoured stranded copper conductor cable 1.1 KV Grade as per IS 7098-Part1-1988																		
code AXLPE= XLPE Insulated Armoured stranded Aluminium conductor cable 1.1 KV Grade as per IS 7098-Part1-1988																		
Code CEPRF= EPR Insulated PCP Rubber stranded conductor cable 1.1 KV Grade as per IS 9968																		
Code RS-485 = Local networks and multidrop communications links																		
Code CXLPS= XLPE/PVC insulated unarmoured shielded Copper Conductor cable.																		
Code Eth=Ethernet Cable																		
Designation: Prefix for Power cable "P", Control Cable "C", Instrumentation cable "IC", Earthing cable "E" are incorporated																		
Abbrevition: SHT=Reference Sheet No. of schematic drg., FRL=Ferrule, CR1=applicable for Crane 1 only, CR2=Applicable for Crane 2 only, CR12=Applicable for Crane 1 as well as Crane 2, CRC= Common for both Cranes																		
CTF=Cross Travel Festoon, MRHF=Monorail Hoist Festoon, CPBSF=Crane Push Button Station Festoon, HPBSF=Hoist Block Push Button Station Festoon, E-CABLE= Encoder Cable																		
CABLE	**LE DETAILS**		**FROM**				**TO**				**CABLE**	**NO OF**	**RUN**	**REQD**	**Proj-Qty**	**Qty-A/C**	**REMARK**	
NO	**CORES**	**SIZE**	**FROM EQUIPMENT**	**T.B.**	**FRL**	**SHT**	**TO EQUIPMENT**	**T.B.**	**FRL**	**SHT**	**CODE**	**CABLES**	**LENGTH**	**LENGTH**	**2**			
	NO.	**SQ MM**		**GROUP NO**	**NO**	**Nos**		**GROUP NO**	**NO**	**Nos**		**RUN**	**IN MTR**	**IN MTR**	**cranes**			
							D. BOARD (IN CABIN)											
C113	18C	2.5	CPBSJB- CRANE PUSH	14TBC -2	114	5	CPBS- CRANE	CPBS S	114	5	CEPRF	1	55	55	110	CR12	CPBSF	
			STATION JUNCTION	-3	115		PUSH BUTTON	SS4-1	115									
			BOX	-4	116		STATION	SS4-2	116									
			(ON CRANE)	-5	117			SS4-3	117									
				-6	105	6		Pb3B-3	105	6								
				-7	131			Pb3B-4	131									
				-8	132			S1B-2	132									
				-9	139	7		Pb2B-3	139	7								
				-10	142			Pb2B-4	142									
				-11	144			Pb1B-1	144									
				-12	148			Pb0B-2	148									
				-13	154			iL1B-X1	154									
				-14	107			iL1B-X2	107									
				-16	271A	18		2Pb1-3	271A	18								
				-17	272A			2Pb1-4	272A									
				-18	273A			2Pb2-4	273A									
				-19	275A			2SPS1-1	275A									
				-20	276A			2SPS1-2	276A									
C114	18C	2.5	CPBSJB- CRANE PUSH	14TBC -22	371A	26	CPBS- CRANE	CPBS 3P	371A	26	CEPRF	1	55	55	110	CR12	CPBSF	
			STATION JUNCTION	-23	372A		PUSH BUTTON	3Pb1-4	372A									
			BOX	-24	373A		STATION	3Pb2-4	373A									
			(ON CRANE)	-25	375A			3SPS1-1	375A									
				-26	376A			3SPS1-2	376A									
				-28	471A	33		4Pb1-3	471A	33								
				-29	472A			4Pb1-4	472A									
				-30	473A			4Pb2-4	473A									
				-31	475A			4SPS1-1	475A									
				-32	476A			4SPS1-2	476A									
				-34	571A	40		5Pb1-3	571A	40								
				-35	572A			5Pb1-4	572A									
				-36	573A			5Pb2-4	573A									
				-37	575A			5SPS1-1	575A									

THIS IS PART OF TECHNICAL SPECIFICATION PE-TS-437-501-A001A REV 0

Job: OG - 06		**Customer: BHARAT HEAVY ELECTRICAL LTD**																
Crane: OG-06/250-50-10Tx21M SPAN POWER HOUSE CRANE (CRANE-1 & CRANE-2)						**Ref Drg No.Electrical Layout**					**Prepd. by: RA**		**Rev. No.**	**1**				
TITLE : Cable Schedule						**CONTRACTOR :**					**Ref-FAFECO Drg. N**		**OG-06/250-50-10Tx21M/201**					
FAFECO DRG NO. OG-06/250-50-10Tx21M/212						**Checked by : AGG**					**Ref-BHEL Drg. No.**		**PE-V0-437-501 -A51 7**					
code CXLPE= XLPE Insulated Armoured stranded copper conductor cable 1.1 KV Grade as per IS 7098-Part1-1988																		
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CTF=Cross Travel Festoon, MRHF=Monorail Hoist Festoon, CPBSF=Crane Push Button Station Festoon, HPBSF=Hoist Block Push Button Station Festoon, E-CABLE= Encoder Cable																		

CABLE	**LE DETAILS**		**FROM**				**TO**				**CABLE**	**NO OF**	**RUN**	**REQD**	**Proj-Qty**	**Qty-A/C**	**REMARK**
NO	**CORES**	**SIZE**	**FROM EQUIPMENT**	**T.B.**	**FRL**	**SHT**	**TO EQUIPMENT**	**T.B.**	**FRL**	**SHT**	**CODE**	**CABLES**	**LENGTH**	**LENGTH**	**2**		
	NO.	**SQ MM**		**GROUP NO**	**NO**	**Nos**		**GROUP NO**	**NO**	**Nos**		**RUN**	**IN MTR**	**IN MTR**	**cranes**		
				-38	576A			5SPS1-2	576A								
C115	24C	2.5	RRJB-RADIO REMOTE	15TBC -2	129	6	RRP-RADIO REMOTE	RRP-	129	6	CXLPE	1	3	3	6	CR12	Vendor
			JUNCTION BOX	-3	131		PANEL		131								
			(ON BRIDGE)	-4	132				132								
				-5	134				134								
				-6	135				135								
				-7	140	7			140	7							
				-8	148				148								
				-10	271B	18			271B	18							
				-11	272B				272B								
				-12	273B				273B								
				-13	276B				276B								
				-15	371B	26			371B	26							
				-16	372B				372B								
				-17	373B				373B								
				-18	376B				376B								
				-20	471B	33			471B	33							
				-21	472B				472B								
				-22	473B				473B								
				-23	476B				476B								
				-25	571B	40			571B	40							
				-26	572B				572B								
				-27	573B				573B								
				-28	576B				576B								
C116	24C	2.5	RRJB-RADIO REMOTE	15TBC -30	251	20	RRP-RADIO REMOTE	RRP-	251	20	CXLPE	1	3	3	6	CR12	Vendor
			JUNCTION BOX	-31	221		PANEL		221								
			(ON BRIDGE)	-32	222				222								
				-33	223				223								
				-34	224				224								
				23TBC -2	755	48			755	48							
				-3	758				758								
				-5	871B	54			871B	54							
				-6	872B				872B								

THIS IS PART OF TECHNICAL SPECIFICATION PE-TS-437-501-A001A REV 0

Job: OG - 06		**Customer: BHARAT HEAVY ELECTRICAL LTD**																
Crane: OG-06/250-50-10Tx21M SPAN POWER HOUSE CRANE (CRANE-1 & CRANE-2)						**Ref Drg No.Electrical Layout**					**Prepd. by: RA**		**Rev. No.**	**1**				
TITLE : Cable Schedule						**CONTRACTOR :**					**Ref-FAFECO Drg. N**		**OG-06/250-50-10Tx21M/201**					
FAFECO DRG NO. OG-06/250-50-10Tx21M/212						**Checked by : AGG**					**Ref-BHEL Drg. No.**		**PE-V0-437-501 -A51 7**					
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CABLE	**LE DETAILS**		**FROM**				**TO**				**CABLE**	**NO OF**	**RUN**	**REQD**	**Proj-Qty**	**Qty-A/C**	**REMARK**	
NO	**CORES**	**SIZE**	**FROM EQUIPMENT**	**T.B.**	**FRL**	**SHT**	**TO EQUIPMENT**	**T.B.**	**FRL**	**SHT**	**CODE**	**CABLES**	**LENGTH**	**LENGTH**	**2**			
	NO.	**SQ MM**		**GROUP NO**	**NO**	**Nos**		**GROUP NO**	**NO**	**Nos**		**RUN**	**IN MTR**	**IN MTR**	**cranes**			
				-7	873B				873B									
				-8	876B				876B									
				-10	971B	61			971B	61								
				-11	972B				972B									
				-12	973B				973B									
				-13	976B				976B									
C117	3C	2.5	MRHP-MONO RAIL	7TBC2 -10	758	48	MRHBJB- MONO RAIL	24TBC	758	48	CEPRF	1	30	30	60	CR12	MRHF	
			HOIST PANEL	-11	759		HOIST BLOCK JN.	-3	759									
							BOX (8LS1)											
C118	3C	2.5	MRHP-MONO RAIL	7TBC2 -13	759	48	8b1- M.R. HOIST	8b1	759	48	CXLPE	1	24	24	48	CR12		
			HOIST PANEL	-14	761		MASTER CONTROLLER		761									
							(IN CABIN)											
C119	3C	2.5	8b1- M.R. HOIST	8b1 -01	760	48	9b1- M.R. C.T.	9b1	760	48	CXLPE	1	24	24	48	CR12		
			MASTER CONTROLLER		761		MASTER CONTROLLER	-01	761									
			(IN CABIN)				(IN CABIN)											
C120	3C	2.5	MRHBJB- MONO RAIL	24TBC -2	758		8LS1-M.R. HOIST	8LS1	758		CEPRF	1	3	3	6	CR12		
			HOIST BLOCK JN.	-3	759		GRAVITY LIMIT	-2	759									
			BOX (8LS1)				SWITCH											
C121	7C	2.5	MRHP-MONO RAIL	7TBC3 -2	753	48	JPB- HBPBB	21TBC	753	48	CXLPE	1	25	25	50	CR12		
			HOIST PANEL	-3	752		JOG P.B. +HOIST	-3	752									
				-4	756		BLOCK P.B. BOARD	-4	756									
				-5	758		(IN CABIN)	-5	758									
				-6	761			-6	761									
				-7	750			-7	750									
C122	7C	2.5	MRHP-MONO RAIL	7TBC4 -2	754	48	HBPBSJB	22TBC	754	48	CXLPE	1	10	10	20	CR12		
			HOIST PANEL	-3	752		HOIST BLOCK P.B.	-3	752									
				-4	757		STATION JN. BOX	-4	757									
				-5	758		(ON BRIDGE)	-5	758									
				-6	761			-6	761									
				-7	750		PAGE 33 OF 40	-7	750									
C123	3C	2.5	MRHP-MONO RAIL	7TBC5 -2	755	48	RRJB- RADIO REMOTE	23TBC	755	48	CXLPE	1	11	11	22	CR12		

THIS IS PART OF TECHNICAL SPECIFICATION PE-TS-437-501-A001A REV 0

Job: OG - 06		**Customer: BHARAT HEAVY ELECTRICAL LTD**																
Crane: OG-06/250-50-10Tx21M SPAN POWER HOUSE CRANE (CRANE-1 & CRANE-2)							**Ref Drg No.Electrical Layout**					**Prepd. by: RA**		**Rev. No.**	**1**			
TITLE : Cable Schedule							**CONTRACTOR :**					**Ref-FAFECO Drg. N**		**OG-06/250-50-10Tx21M/201**				
FAFECO DRG NO. OG-06/250-50-10Tx21M/212							**Checked by : AGG**					**Ref-BHEL Drg. No.**		**PE-V0-437-501 -A51 7**				
code CXLPE= XLPE Insulated Armoured stranded copper conductor cable 1.1 KV Grade as per IS 7098-Part1-1988																		
code AXLPE= XLPE Insulated Armoured stranded Aluminium conductor cable 1.1 KV Grade as per IS 7098-Part1-1988																		
Code CEPRF= EPR Insulated PCP Rubber stranded conductor cable 1.1 KV Grade as per IS 9968																		
Code RS-485 = Local networks and multidrop communications links																		
Code CXLPS= XLPE/PVC insulated unarmoured shielded Copper Conductor cable.																		
Code Eth=Ethernet Cable																		
Designation: Prefix for Power cable "P", Control Cable "C", Instrumentation cable "IC", Earthing cable "E" are incorporated																		
Abbrevition: SHT=Reference Sheet No. of schematic drg., FRL=Ferrule, CR1=applicable for Crane 1 only, CR2=Applicable for Crane 2 only, CR12=Applicable for Crane 1 as well as Crane 2, CRC= Common for both Cranes																		
CTF=Cross Travel Festoon, MRHF=Monorail Hoist Festoon, CPBSF=Crane Push Button Station Festoon, HPBSF=Hoist Block Push Button Station Festoon, E-CABLE= Encoder Cable																		
CABLE	**LE DETAILS**		**FROM**				**TO**				**CABLE**	**NO OF**	**RUN**	**REQD**	**Proj-Qty**	**Qty-A/C**	**REMARK**	
NO	**CORES**	**SIZE**	**FROM EQUIPMENT**	**T.B.**	**FRL**	**SHT**	**TO EQUIPMENT**	**T.B.**	**FRL**	**SHT**	**CODE**	**CABLES**	**LENGTH**	**LENGTH**	**2**			
	NO.	**SQ MM**		**GROUP NO**	**NO**	**Nos**		**GROUP NO**	**NO**	**Nos**		**RUN**	**IN MTR**	**IN MTR**	**cranes**			
			HOIST PANEL	-3	758		JN. BOX	-3	758									
							(ON BRIDGE)											
C124	7C	2.5	MRHP-MONO RAIL	8TBC -12	871	54	8b1- M. R. HOIST	8b1	871	54	CXLPE	1	24	24	48	CR12		
			HOIST PANEL (8b1)	-13	872		MASTER CONTROLLER	-03	872									
				-14	873		(IN CABIN)	-05	873									
				-15	874			-02	874									
				-16	875			-04	875									
				-17	876			-06	876									
C125	7C	2.5	MRHP-MONO RAIL	8TBC -19	871A	54	HBPBSJB- HOIST	22TBC	871A	54	CXLPE	1	10	10	20	CR12		
			HOIST PANEL	-20	872A		BLOCK P.B. STATION	-10	872A									
				-21	873A		JUNCTION BOX	-11	873A									
				-22	875A		(ON BRIDGE)	-12	875A									
				-23	876A			-13	876A									
C126	7C	2.5	MRHP-MONO RAIL	8TBC -25	871B	54	RRJB- RADIO REMOTE	23TBC	871B	54	CXLPE	1	10	10	20	CR12		
			HOIST PANEL	-26	872B		JUNCTION BOX	-6	872B									
				-27	873B			-7	873B									
				-28	876B			-8	876B									
C127	7C	2.5	MRHP-MONO RAIL	8TBC -30	882	54	MRHBJB- MONO RAIL	24TBC	882	54	CEPRF	1	30	30	60	CR12	MRHF	
			HOIST PANEL	-31	883		HOIST BLOCK JN. BOX	-6	883									
			(8LS2)	-32	884		(8LS2)	-7	884									
				-33	885			-8	885									
C128	7C	2.5	MRHBJB- MONO RAIL	24TBC -5	882	54	8LS2- M.R. HOIST	8LS2	882	54	CXLPE	1	3	3	6	CR12		
			HOIST BLOCK JN. BOX	-6	883		ROTARY LIMIT	-3	883									
			(8LS2)	-7	884		SWITCH	-2	884									
				-8	885			-4	885									
C129	3C	2.5	MRHP-MONO RAIL	8TBC -35	866	53	JPB- HBPBB	21TBC	866	53	CXLPE	1	25	25	50	CR12		
			HOIST PANEL	-36	867		JOG P.B. +HOIST	-20	867									
							BLOCK P.B. BOARD											
							(IN CABIN)											

THIS IS PART OF TECHNICAL SPECIFICATION PE-TS-437-501-A001A REV 0

Job: OG - 06		**Customer: BHARAT HEAVY ELECTRICAL LTD**																
Crane: OG-06/250-50-10Tx21M SPAN POWER HOUSE CRANE (CRANE-1 & CRANE-2)							**Ref Drg No.Electrical Layout**					**Prepd. by: RA**		**Rev. No.**	**1**			
TITLE : Cable Schedule							**CONTRACTOR :**					**Ref-FAFECO Drg. N**		**OG-06/250-50-10Tx21M/201**				
FAFECO DRG NO. OG-06/250-50-10Tx21M/212							**Checked by : AGG**					**Ref-BHEL Drg. No.**		**PE-V0-437-501 -A51 7**				
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Code CXLPS= XLPE/PVC insulated unarmoured shielded Copper Conductor cable.																		
Code Eth=Ethernet Cable																		
Designation: Prefix for Power cable "P", Control Cable "C", Instrumentation cable "IC", Earthing cable "E" are incorporated																		
Abbrevition: SHT=Reference Sheet No. of schematic drg., FRL=Ferrule, CR1=applicable for Crane 1 only, CR2=Applicable for Crane 2 only, CR12=Applicable for Crane 1 as well as Crane 2, CRC= Common for both Cranes																		
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CABLE	**LE DETAILS**		**FROM**				**TO**				**CABLE**	**NO OF**	**RUN**	**REQD**	**Proj-Qty**	**Qty-A/C**	**REMARK**	
NO	**CORES**	**SIZE**	**FROM EQUIPMENT**	**T.B.**	**FRL**	**SHT**	**TO EQUIPMENT**	**T.B.**	**FRL**	**SHT**	**CODE**	**CABLES**	**LENGTH**	**LENGTH**	**2**			
	NO.	**SQ MM**		**GROUP NO**	**NO**	**Nos**		**GROUP NO**	**NO**	**Nos**		**RUN**	**IN MTR**	**IN MTR**	**cranes**			
C130	7C	2.5	MRHP-MONO RAIL	9TBC -12	971	61	9b1- M. R. CROSS	9b1	971	61	CXLPE	1	24	24	48	CR12		
			HOIST PANEL (9b1)	-13	972		TRAVEL MASTER	-03	972									
				-14	973		CONTROLLER	-05	973									
				-15	974		(IN CABIN)	-02	974									
				-16	975			-04	975									
				-17	976			-06	976									
C131	7C	2.5	MRHP-MONO RAIL	9TBC -19	971A	61	HBPBSJB- HOIST	22TBC	971A	61	CXLPE	1	10	10	20	CR12		
			HOIST PANEL	-20	972A		BLOCK P.B. STATION	-16	972A									
				-21	973A		JUNCTION BOX	-17	973A									
				-22	975A		(ON BRIDGE)	-18	975A									
				-23	976A			-19	976A									
C132	7C	2.5	MRHP-MONO RAIL	9TBC -25	971B	61	RRJB- RADIO REMOTE	23TBC	971B	61	CXLPE	1	11	11	22	CR12		
			HOIST PANEL	-26	972B		JUNCTION BOX	-11	972B									
				-27	973B			-12	973B									
				-28	976B			-13	976B									
C133	7C	2.5	MRHP-MONO RAIL	9TBC -30	982	61	MRHBJB- MONO RAIL	24TBC	982	61	CEPRF	1	30	30	60	CR12	MRHF	
			HOIST PANEL	-31	983		HOIST BLOCK JN. BOX	-11	983									
			(9LS)	-32	984		(9LS)	-12	984									
				-33	985			-13	985									
C134	7C	2.5	MRHBJB- MONO RAIL	24TBC -10	982	61	9LS- M.R. CROSS	9LS	982	61	CXLPE	1	3	3	6	CR12		
			HOIST BLOCK JN. BOX	-11	983		ROTARY LIMIT	-3	983									
			(9LS)	-12	984		SWITCH	-2	984									
				-13	985			-4	985									
C135	3C	2.5	MRHP-MONO RAIL	9TBC -35	966	60	JPB- HBPBB	21TBC	966	60	CXLPE	1	25	25	50	CR12		
			HOIST PANEL	-36	967		JOG P.B. +HOIST	-22	967									
							BLOCK P.B. BOARD											

THIS IS PART OF TECHNICAL SPECIFICATION PE-TS-437-501-A001A REV 0

Job: OG - 06		**Customer: BHARAT HEAVY ELECTRICAL LTD**																
Crane: OG-06/250-50-10Tx21M SPAN POWER HOUSE CRANE (CRANE-1 & CRANE-2)						**Ref Drg No.Electrical Layout**					**Prepd. by: RA**		**Rev. No.**	**1**				
TITLE : Cable Schedule						**CONTRACTOR :**					**Ref-FAFECO Drg. N**		**OG-06/250-50-10Tx21M/201**					
FAFECO DRG NO. OG-06/250-50-10Tx21M/212						**Checked by : AGG**					**Ref-BHEL Drg. No.**		**PE-V0-437-501 -A51 7**					
code CXLPE= XLPE Insulated Armoured stranded copper conductor cable 1.1 KV Grade as per IS 7098-Part1-1988																		
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Code RS-485 = Local networks and multidrop communications links																		
Code CXLPS= XLPE/PVC insulated unarmoured shielded Copper Conductor cable.																		
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Designation: Prefix for Power cable "P", Control Cable "C", Instrumentation cable "IC", Earthing cable "E" are incorporated																		
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CABLE	**LE DETAILS**		**FROM**				**TO**				**CABLE**	**NO OF**	**RUN**	**REQD**	**Proj-Qty**	**Qty-A/C**	**REMARK**	
NO	**CORES**	**SIZE**	**FROM EQUIPMENT**	**T.B.**	**FRL**	**SHT**	**TO EQUIPMENT**	**T.B.**	**FRL**	**SHT**	**CODE**	**CABLES**	**LENGTH**	**LENGTH**	**2**			
	NO.	**SQ MM**		**GROUP NO**	**NO**	**Nos**		**GROUP NO**	**NO**	**Nos**		**RUN**	**IN MTR**	**IN MTR**	**cranes**			
							(IN CABIN)											
C136	24C	2.5	HBPBSJB- HOIST	22TBC -2	754	48	MRHPBS-MONO	MRHPBS 7Pb2	754	48	CEPRF	1	45	45	90	CR12	HPBSF	
			BLOCK PUSH BUTTON	-3	752		RAIL HOIST BLOCK	7Pb2A-4	752									
			STATION JN. BOX	-4	757		PUSH BUTTON	7Pb1B-1	757									
				-5	758		STATION	7Pb1B-2	758									
				-6	761			7Il1B-X1	761									
				-7	750			7Il1B-X2	750									
				-9	871A	54		8Pb1-3	871A	54								
				-10	872A			8Pb1-4	872A									
				-11	873A			8Pb2-4	873A									
				-12	875A			8SPS1-1	875A									
				-13	876A			8SPS1-2	876A									
				-15	971A	61		9Pb1-3	971A	61								
				-16	972A			9Pb1-4	972A									
				-17	973A			9Pb2-4	973A									
				-18	975A			9SPS1-1	975A									
				-19	976A			9SPS1-2	976A									
				-21	130	6		7Pb3B-3	130	6								
				-22	131			7Pb3B-4	131									
				-23	132			S1C-2	132									
C137	24C	2.5	PJB-PLUG JN. BOX	25TBC -2	145	7B	PLUG-P	P(PLUG)	145	7B	CEPRF	1	10	10	10	CR1		
			(ON CRANE-1)	-3	152			P2	152									
				-4	153			P3	153									
				-5	154			P4	154									
				-6	107			P5	107									
				-7	159			P6	159									
				-8	160			P7	160									
				-9	161	9		P8	161	9								
				-10	162			P9	162									
				-12	226	20		P10	226	20								
				-13	227			P11	227									
				-14	228			P12	228									
				-15	229			P13	229									
				-16	230			P14	230									
				-17	231		PAGE 36 OF 40	P15	231									

THIS IS PART OF TECHNICAL SPECIFICATION PE-TS-437-501-A001A REV 0

Job: OG - 06		**Customer: BHARAT HEAVY ELECTRICAL LTD**																
Crane: OG-06/250-50-10Tx21M SPAN POWER HOUSE CRANE (CRANE-1 & CRANE-2)						**Ref Drg No.Electrical Layout**					**Prepd. by: RA**		**Rev. No.**	**1**				
TITLE : Cable Schedule						**CONTRACTOR :**					**Ref-FAFECO Drg. N**		**OG-06/250-50-10Tx21M/201**					
FAFECO DRG NO. OG-06/250-50-10Tx21M/212						**Checked by : AGG**					**Ref-BHEL Drg. No.**		**PE-V0-437-501 -A51 7**					
code CXLPE= XLPE Insulated Armoured stranded copper conductor cable 1.1 KV Grade as per IS 7098-Part1-1988																		
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CABLE	**LE DETAILS**		**FROM**				**TO**				**CABLE**	**NO OF**	**RUN**	**REQD**	**Proj-Qty**	**Qty-A/C**	**REMARK**	
NO	**CORES**	**SIZE**	**FROM EQUIPMENT**	**T.B.**	**FRL**	**SHT**	**TO EQUIPMENT**	**T.B.**	**FRL**	**SHT**	**CODE**	**CABLES**	**LENGTH**	**LENGTH**	**2**			
	NO.	**SQ MM**		**GROUP NO**	**NO**	**Nos**		**GROUP NO**	**NO**	**Nos**		**RUN**	**IN MTR**	**IN MTR**	**cranes**			
INSTRUMENTATION CABLES:																		
IC1			LCP- LOAD CELL			16	MH/AH SUM DISPLAY			16	RS-485	1	25	25	50	CR12		
			PANEL				ON BRIDGE											
							(LOADCELL)											
IC2	4C	0.5	LCP -LOAD CELL		20	16	MHLCJB- MAIN HOIST	MHLCJB	20	16	CXLPS	1	60	60	120	CR12	CTF	
			PANEL		21		LOAD CELL JN. BOX	-2	21									
			(IN CABIN)		22		(ON TROLLEY)	-3	22									
					23			-4	23									
IC3	4C	0.5	MHLCJB- MAIN HOIST	MHLCJB -1	20	16	MHLC- MAIN HOIST	MHLC	20	16	CXLPS	1	5	5	10	CR12		
			LOAD CELL JN. BOX	-2	21		LOAD CELL	-2	21									
			(ON TROLLEY)	-3	22		(ON TROLLEY)	-3	22									
				-4	23			-4	23									
IC4	4C	0.5	LCP -LOAD CELL		24	16	AHLCJB- AUX. HOIST	AHLCJB	24	16	CXLPS	1	60	60	120	CR12	CTF	
			PANEL		25		LOAD CELL JN. BOX	-2	25									
			(IN CABIN)		26		(ON TROLLEY)	-3	26									
					27			-4	27									
IC5	4C	0.5	AHLCJB- AUX.HOIST	AHLCJB -1	24	16	AHLC- AUX. HOIST	AHLC	24	16	CXLPS	1	5	5	10	CR12		
			LOAD CELL JN. BOX	-2	25		LOAD CELL	-2	25									
			(ON TROLLEY)	-3	26		(ON TROLLEY)	-3	26									
				-4	27			-4	27									
IC6	7C	0.5	MHP- MAIN HOIST	2DR -A+	K1	15	2E1- MAIN HOIST	2E1	K1	15	CXLPS	1	60	60	120	CR12	E-CABLE	
			PANEL	-A-	K1-		ENCODER	K1-	K1-									
				-B+	K2			K2	K2									
				-B-	K2-			K2-	K2-									
				GND	0V			0V	0V									
				+15V/+24V	UB			UB	UB									
IC7	7C	0.5	AHP- AUX HOIST	3DR -A+	K1	23	3E1- AUX. HOIST	3E1	K1	23	CXLPS	1	67	67	134	CR12	E-CABLE	
			PANEL	-A-	K1-		ENCODER	K1-	K1-									

THIS IS PART OF TECHNICAL SPECIFICATION PE-TS-437-501-A001A REV 0

Job: OG - 06		**Customer: BHARAT HEAVY ELECTRICAL LTD**																
Crane: OG-06/250-50-10Tx21M SPAN POWER HOUSE CRANE (CRANE-1 & CRANE-2)						**Ref Drg No.Electrical Layout**					**Prepd. by: RA**		**Rev. No.**	**1**				
TITLE : Cable Schedule						**CONTRACTOR :**					**Ref-FAFECO Drg. N**		**OG-06/250-50-10Tx21M/201**					
FAFECO DRG NO. OG-06/250-50-10Tx21M/212						**Checked by : AGG**					**Ref-BHEL Drg. No.**		**PE-V0-437-501 -A51 7**					
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CABLE	**LE DETAILS**		**FROM**				**TO**				**CABLE**	**NO OF**	**RUN**	**REQD**	**Proj-Qty**	**Qty-A/C**	**REMARK**	
NO	**CORES**	**SIZE**	**FROM EQUIPMENT**	**T.B.**	**FRL**	**SHT**	**TO EQUIPMENT**	**T.B.**	**FRL**	**SHT**	**CODE**	**CABLES**	**LENGTH**	**LENGTH**	**2**			
	NO.	**SQ MM**		**GROUP NO**	**NO**	**Nos**		**GROUP NO**	**NO**	**Nos**		**RUN**	**IN MTR**	**IN MTR**	**cranes**			
				-B+	K2			K2	K2									
				-B-	K2-			K2-	K2-									
				GND	0V			0V	0V									
				+15V/+24V	UB			UB	UB									
IC8	7C	0.5	CTP- CROSS TRAVEL	4DR -A+	K1	30	4E1- CROSS TRAVEL	4E1	K1	30	CXLPS	1	55	55	110	CR12	E-CABLE	
			PANEL	-A-	K1-		ENCODER	K1-	K1-									
				-B+	K2			K2	K2									
				-B-	K2-			K2-	K2-									
				GND	0V			0V	0V									
				+15V/+24V	UB			UB	UB									
IC9	7C	0.5	LTP- LONG TRAVEL	5DR -A+	K1	37	5E1- LONG TRAVEL	5E1	K1	37	CXLPS	1	15	15	30	CR12	E-CABLE	
			PANEL	-A-	K1-		ENCODER	K1-	K1-									
				-B+	K2			K2	K2									
				-B-	K2-			K2-	K2-									
				GND	0V			0V	0V									
				+15V/+24V	UB			UB	UB									
IC10	3C	0.5	RRT- RADIO REMOTE				P1- PROXIMITY				CXLPS	1	10	10	10	CR1		
			TRANSMITTER				SENSOR-1											
			(ON LIFTING BEAM)				(ON LIFTING BEAM)											
IC11	3C	0.5	RRT- RADIO REMOTE				P2- PROXIMITY				CXLPS	1	10	10	10	CR1		
			TRANSMITTER				SENSOR-2											
			(ON LIFTING BEAM)				(ON LIFTING BEAM)											
IC12	3C	0.5	RRT- RADIO REMOTE				P3- PROXIMITY				CXLPS	1	10	10	10	CR1		
			TRANSMITTER				SENSOR-3											
			(ON LIFTING BEAM)				(ON LIFTING BEAM)											
IC13	3C	0.5	RRT- RADIO REMOTE				P4- PROXIMITY				CXLPS	1	10	10	10	CR1		
			TRANSMITTER				SENSOR-4											
			(ON LIFTING BEAM)				(ON LIFTING BEAM)											
IC14			PLC PANEL			45	PLC PANEL			45	Eth	1	30	30	30	CRC		

THIS IS PART OF TECHNICAL SPECIFICATION PE-TS-437-501-A001A REV 0

Job: OG - 06		**Customer: BHARAT HEAVY ELECTRICAL LTD**																
Crane: OG-06/250-50-10Tx21M SPAN POWER HOUSE CRANE (CRANE-1 & CRANE-2)						**Ref Drg No.Electrical Layout**				**Prepd. by: RA**		**Rev. No.**	**1**				
TITLE : Cable Schedule						**CONTRACTOR :**				**Ref-FAFECO Drg. N**		**OG-06/250-50-10Tx21M/201**					
FAFECO DRG NO. OG-06/250-50-10Tx21M/212						**Checked by : AGG**				**Ref-BHEL Drg. No.**		**PE-V0-437-501 -A51 7**					
code CXLPE= XLPE Insulated Armoured stranded copper conductor cable 1.1 KV Grade as per IS 7098-Part1-1988																		
code AXLPE= XLPE Insulated Armoured stranded Aluminium conductor cable 1.1 KV Grade as per IS 7098-Part1-1988																		
Code CEPRF= EPR Insulated PCP Rubber stranded conductor cable 1.1 KV Grade as per IS 9968																		
Code RS-485 = Local networks and multidrop communications links																		
Code CXLPS= XLPE/PVC insulated unarmoured shielded Copper Conductor cable.																		
Code Eth=Ethernet Cable																		
Designation: Prefix for Power cable "P", Control Cable "C", Instrumentation cable "IC", Earthing cable "E" are incorporated																		
Abbrevition: SHT=Reference Sheet No. of schematic drg., FRL=Ferrule, CR1=applicable for Crane 1 only, CR2=Applicable for Crane 2 only, CR12=Applicable for Crane 1 as well as Crane 2, CRC= Common for both Cranes																		
CTF=Cross Travel Festoon, MRHF=Monorail Hoist Festoon, CPBSF=Crane Push Button Station Festoon, HPBSF=Hoist Block Push Button Station Festoon, E-CABLE= Encoder Cable																		
CABLE	**LE DETAILS**		**FROM**				**TO**				**CABLE**	**NO OF**	**RUN**	**REQD**	**Proj-Qty**	**Qty-A/C**	**REMARK**	
NO	**CORES**	**SIZE**	**FROM EQUIPMENT**	**T.B.**	**FRL**	**SHT**	**TO EQUIPMENT**	**T.B.**	**FRL**	**SHT**	**CODE**	**CABLES**	**LENGTH**	**LENGTH**	**2**			
	NO.	**SQ MM**		**GROUP NO**	**NO**	**Nos**		**GROUP NO**	**NO**	**Nos**		**RUN**	**IN MTR**	**IN MTR**	**cranes**			
			CRANE-1				CRANE-2											
EARTHING CABLES:																		
E1	1C	35	DCOS1-DSL	DCOS1 -E	E	3	D.S.L. CON- DSL	DSL	E	3	CXLPE	1	35	35	35	CRC		
			CHANGE OVER				CONDUCTORS											
			SWITCH (AT G. L) -OUT															
E2	GI	Strip	GI STRIP -LOWER			3						1	65	65	130	CR12		
			PORTION (50x6)															
E3	1C	16	DSL CURRENT	DSLCC -E	E	3	GI STRIP -LOWER				CXLPE	1	3	3	6	CR12		
			COLLECTORS				PORTION (50x6)											
E4	1C	16	GI STRIP -LOWER			3	PP- PROTECTIVE	1TBP1	E	3	CXLPE	2	1	2	4	CR12		
			PORTION (50x6)				PANEL											
E5	1C	10	GI STRIP -LOWER				MHP- MAIN HOIST				CEPRF	2	1	2	4	CR12		
			PORTION (50x6)				PANEL											
E6	1C	10	GI STRIP -LOWER				AHP- AUX. HOIST				CEPRF	2	1	2	4	CR12		
			PORTION (50x6)				PANEL											
E7	1C	10	GI STRIP -LOWER				JBG- JUNCTION BOX				CEPRF	2	1	2	4	CR12		
			PORTION (50x6)				ON GRIDER											
E8	3C	4	JBG- JUNCTION BOX				JBT- JUNCTION BOX				CEPRF	1	26	26	52	CR12	CTF	
			ON GRIDER				ON TROLLEY											
E9	GI	Strip	GI STRIP ON TROLLEY									1	26	26	52	CR12		
			PORTION (25x3)															
E10	1C	10	GI STRIP -ON TROLLEY				JBT- JUNCTION BOX				CEPRF	2	1	2	4	CR12		
			PORTION (25x3)				ON TROLLEY											
E11	1C	10	GI STRIP -ON TROLLEY				MAIN AND AUX. HOIST				CEPRF	4	1	4	8	CR12		

THIS IS PART OF TECHNICAL SPECIFICATION PE-TS-437-501-A001A REV 0

Job: OG - 06		**Customer: BHARAT HEAVY ELECTRICAL LTD**																
Crane: OG-06/250-50-10Tx21M SPAN POWER HOUSE CRANE (CRANE-1 & CRANE-2)						**Ref Drg No.Electrical Layout**				**Prepd. by: RA**		**Rev. No.**	**1**					
TITLE : Cable Schedule						**CONTRACTOR :**				**Ref-FAFECO Drg. N**		**OG-06/250-50-10Tx21M/201**						
FAFECO DRG NO. OG-06/250-50-10Tx21M/212						**Checked by : AGG**				**Ref-BHEL Drg. No.**		**PE-V0-437-501 -A51 7**						
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CABLE	**LE DETAILS**		**FROM**				**TO**				**CABLE**	**NO OF**	**RUN**	**REQD**	**Proj-Qty**	**Qty-A/C**	**REMARK**	
NO	**CORES**	**SIZE**	**FROM EQUIPMENT**	**T.B.**	**FRL**	**SHT**	**TO EQUIPMENT**	**T.B.**	**FRL**	**SHT**	**CODE**	**CABLES**	**LENGTH**	**LENGTH**	**2**			
	NO.	**SQ MM**		**GROUP NO**	**NO**	**Nos**		**GROUP NO**	**NO**	**Nos**		**RUN**	**IN MTR**	**IN MTR**	**cranes**			
			PORTION (25x3)				MOTOR											
E12	1C	2.5	GI STRIP -ON TROLLEY				CT Motor(2), Brake(2),				CEPRF	10	1	10	20	CR12		
			PORTION (25x3)				Brake (1) for MH,AH,											
							Gravity & Rotary limit switch (2) of MH,AH											
E13	1C	2.5	GI STRIP -LOWER				LT Motor (4), LT Brake(4)				CEPRF	40	1	40	80	CR12		
			PORTION (50x6)				CT (2) & LT (2)LIMIT SWITCH											
							CT+LT PANELS											
							CABIN EQUIPMENTS (15)											
							ALL JUNCTION BOX ETC.											
							ALL EQUIPMENTS ON											
							LOWER PORTION CRANE											

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Job No	437	Customer	SJVN ARUN-3 POWER DEVELOPMENT COMPANY Pvt. LTD.(SAPDC)
Status	Contract	Project	ARUN-3 HYDRO ELECTRIC PROJECT (NEPAL) (4X225MW)
Distribution		Consultant:	SJVN Ltd
TO		BHARAT HEAVY ELECTRICAL LTD POWER SECTOR-PROJECT ENGINEERING MANAGEMENT NOIDA	
NO			
REV No.	REV DATE		

	Name	Sign	Date
Prepared by	MKM		10.12.20
Checked by	SG		10.12.20
Approved By	SG		10.12.20

CONTROL WRITEUP FOR
250/50/10T POWER HOUES DOUBLE GIRDER CRANE

FAFECO
FURNACE & FOUNDRY EQUIPMENT CO.

Document No:- PE-V0-437-501-A520

Page (excluding cover page)	20	Rev	0

REFERENCE DRAWINGS:
1. PE-V0-437-501-A505: G.A. and assembly drawing including wheel load details, monorail details for 250/50/10T Power House Crane with CT DSL details
2. PE-V0-437-501-A517: All Electrical, Control Drawings and Schematic circuit diagram of all panels ,Cable Block & Termination Diagram,Coordination of fuse, MCCB, Power contractors, JB/MB/Kiosk Diagram, BOM Including earthing diagram For 250/50/10T Power House Crane

Fafeco Job: OG06

Operational philosophy of 2 Nos. identical 250/50T+10T X 21M Cranes with individual or tandem operation from any crane cabin.

Direct Customer: Bharat Heavy electricals Limited. (BHEL)

End-user Customer: Arun-III Hydro-Electric Project in Nepal (SAPDC)

EOT Cranes (2 Nos.) are used to handle Heavy Loads of stator and Rotor in tandem mode and light loads up to S.W.L of 250T in independent crane operation mode. These Cranes are used for erection/maintenance of Turbine Generator Stator or Rotor etc. These cranes are located in the same bay and can be operated in individual or tandem mode for assembly/maintenance of Turbine Generator Stator or Rotor.

Motor Speed Control: Speed of the motors is controlled through VVVF (Variable Voltage Variable Frequency Drives for load independent operation with precision and electricity saving associated with PLC for tandem operation.

Schematic Circuit Diagram: Crane-1 and Crane-2 ->Fafeco Drawing: OG-16/250-50T10TX21M/201 (BHEL Drawing: PE-VO-423-501-A517) of 65 pages for each crane.

Components Function & Location with reference drawing page number: This is explained in the tabular form on page 4.

Crane Operation: Each Crane can be operated to work in following modes.

1. Individual mode by keeping SS2 in individual mode position and ensuring that mechanical link, electrical connections between 2 cranes required only for tandem operation are disconnected.
2. Tandem mode: Select selector switch SS2 in Master position of the Master Crane and SS2 in Slave position of the other (slave) crane. This mode can be operated from Cabin only. Any Crane can be made master and other crane as Slave.
3. Each Crane operations is controlled as under.
   - 3.1 Cabin: (a) Individual Crane operation. (b) Tandem Crane Operation by keeping any one crane as Master and other crane as slave. (c) Mono Rail Hoist Block attached to crane Operation (d) Transfer of operational control of Crane and Mono rail Hoist Block to Ground level.
   - 3.2 Ground level operations:
     - 3.2.1 From Crane Pendant Control after Cabin Operator transferring control to Ground Operation: (a) Crane operations. (b) Transfer of operation to Mono Rail Hoist Block Pendant Operation (c) Transfer of operation to Radio Remote Control for Crane as well as Mono Rail Hoist Block Pendant Operation
     - 3.2.2 From Mono Rail Hoist Block after Crane Pendant transferring control to Mono Rail Hoist Block: Hoist block Operations only.
     - 3.2.3 From Radio Remote Control after Crane Pendant transferring control to Radio Remote Control: (a) Crane Operations (b) Hoist Block Operation
     - 3.2.4 Tandem operation of 2 cranes can be operated from any crane from cabin mode only and Tandem operation cannot be done from any other mode of operation viz crane pendant or Hoist Block Pendant or RRC. Only individual

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THIS IS PART OF TECHNICAL SPECIFICATION PE-TS-437-501-A001A REV 0

Crane operations from Crane Pendant, Individual HB operations from Hoist Block Pendant and Individual Crane Operations or individual Hoist Block operations can be done from Radio Remote control.

3.2.5 Crane operations and HB Operations are interlocked so that both cannot be operated at the same time.

4. To operate cranes in individual mode particularly long travel, ensure that mechanical link, electrical plug and sockets, plc communication wires of both cranes are disengaged and individual cranes are not having any mechanical linkage/electrical connection with each other. While doing any operation for correction/adjustment of MH/AH/CT motions, high alertness is required and all motions should be operated in very slow/jog mode.
5. To operate both cranes In Tandem mode, Master Crane operator shall take following steps.
   (a) Selector Switch SS1 of Master and slave cranes should be in Cabin mode.
   (b) Master Crane Operator has to select selector switch SS2 in Master position and Slave crane Operator in Slave position.
   (c) Bring both crane close enough with high alertness for engaging lifting beam to both cranes and each crane is operated by individual operator in individual mode. Operate bypass switch 5IBPb in independent mode (TBS1 in tandem mode) if anti-collision switch is operated in above process of bringing cranes close enough.
   (d) Continue to operate both cranes in individual mode to engage lifting beam levelled horizontally at ground level. Engage lifting beam and then make both cranes off for safety reasons. Now engage mechanical link, electrical plug socket connection and plc Ethernet switch cable connections for preparing to operate in tandem operation.
   (e) Engaged 2 Nos. Mechanical links (one on each crane) operates 2 Nos. limit switches (one on each crane) which gives feedback to master and slave crane operator that mechanical link is engaged. Anti-collision limit switches of both cranes are to be bypassed by 5TBS1.
   (f) PLC Ethernet Cable between 2 cranes is connected for PLC communication with RJ-45 connector.
   (g) Crane-1 is provided with multi Pin Plug and Crane-2 is provided with multi Pin Socket for tandem operation. Multi pin Plug of 1st crane (Crane-1) is engaged with multi pin Socket of 2nd crane (Crane-2).
   (h) Selector switch ss1 should be in cabin mode for tandem operation. Change selector switch SS2 in master position for any one crane (example crane-1) and in slave position for other crane and (example crane-2). Change selector switch 5TBS1 in bypass mode for both cranes. Indicating lamp il2A shall glow if mechanical link between both cranes is engaged.
   (i) After completing above activities and ensuring that indicating lamp for mechanical engaged link is ON with crane ready for start, Master Crane operator shall press start crane button for crane operation in tandem mode and operate both cranes with controls at his command in operator cabin.
6. Following Questions and Answer mode table shall assist to better understanding for bypass in anti-collision mode.

Question 1:	How to bring the individually operated crane very close to other crane (in the range of anti-collision limit switch) for engaging mechanical lock, electrical plug-socket and Ethernet switch when the anti-collision limit switch operates and does not permit the long travel operation movement.

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Answer :1	Refer electrical Scheme BHEL Drg No.: PE-V0-437-501 -A51 7. When crane operator (example: crane-1) moves the crane towards other crane (example: crane-2) doing individual crane operation during long travel operation and when the crane-1 reaches in anti-collision limit switch range set in crane-1, anti-collision limit switch operates. Refer sheet 39A, section B7 where 5RAC1 is anti-collision limit switch. Aux-contactor 5dAC shall remain energised when the crane-1 is out of the range of anti-collision of crane-2 thereby permitting the long travel movement towards crane-2 as per circuit on sheet 40, section E2 as aux-contactor 5dAC is energised. When crane-1 comes in the anti-collision range of crane-2, aux-contactor 5dAC gets de-energised, aux-contactor (direction) 5C1 (sheet 40) also gets de-energised. Crane-1 stops moving towards crane-2 direction. Crane-1 operator has to (a) bring master controller 5b1 (sheet 40) to zero position (b) press push button 5IBPb (sheet 6 and is interlocked with aux. contactor d11 for crane individual operation). This will bypass de-energised anti-collision aux. contactor 5dAC. (c) keeping one finger of hand pressed on 5IBPb push button for bypass (d12 energises in sheet 6, d12 bypasses 5dAC, 5C1 is energised in sheet 40), move the controller 5b1 in 1st notch with slow movement towards crane-2 carefully by stop-start method till crane-1 reaches close to crane-2 for engaging mechanical and electrical locking/connection respectively. Caution: Operate crane-1 with extreme care and in slow speeds only during Long travel anti-collision bypass operation as crane-1 is in bypass anti-collision zone. After engaging mechanical and electrical locking/connection respectively. Change the crane operations in master for operational crane and slave mode for non-operational crane. Change the selector switch 5TBS1 (sheet 6) in bypass mode for tandem operations of the cranes.
Question :2	How to bypass the anti-collision limit switch for moving the crane close to other crane in individual mode operation for operational requirement with caution by operator.
Answer :2	Normally Fafeco recommends to move crane-2 away to take the required position of crane-1 in long travel operation. However due to unavoidable circumstances, if this operation is required then crane operator has to take caution and take operational responsibility of avoiding any accident. Same method as explained in Answer: 1 is to be adopted except that crane-1 shall be at appreciable distance from crane-2 (mechanical/electrical locking/connection is not required) but within the anti-collision range of crane-1. Now crane-1 operator has to lift the pressed finger on 5IBPb push button which action shall not allow crane-1 movement towards crane-2 and crane-1 can be operated for other motions. Caution: Operate crane-1 with extreme care and in slow speeds only as crane-1 is in bypass anti-collision zone.

7. Following Table given the sheet references for (a) crane-1 (b) crane-2 (c) crane 1 & 2 (d) Tandem connections of Crane 1 & 2

Sr. No.	Crane Nos.	Sheets
1	Crane-1 Only	7, 7B, 18, 20, 39, 40, 45
2	Crane-2 Only	7A, 7C, 18A, 20A, 39A, 40A, 45A
3	Crane-1 & 2 Common	1-7, 8-17, 19, 20B-38, 41-44, 46-65
4	Crane-1 & 2 Tandem Connections	7B, 7C, 20B, 44

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Abbreviations: Drg-Pg= Drawing Page reference of crane control schematic. Page X (Number) P indicates page no. of PLC drg. PP= Protective Panel, RRC=Radio Remote control, MH=Main Hoist Motion, AH=Aux. Hoist Motion, CT=Cross Travel Motion, LT= Long Travel Motion, MHP=Main Hoist Panel, AHP=Aux. Hoist Panel, CTP=Cross Travel Panel, LTP=Long Travel Panel, PLCP=Programme Logic Control Panel, HBP=Panel for Hoist and CT of hoist Block, HB=Hoist Block on mono Rail of Crane, Aux.=Auxiliary, RRC=Radio Remote Control, Cr=Crane, LB-RRCP=Lifting Beam Radio Remote control Receiver Panel, Cr-RRCP= Crane Radio Remote control Receiver Panel, Cr-Pen=Crane Pendant, HB-Pen=Hoist Block Pendant, Gantry-Col-X=Gantry Column No. (Example Gantry-Col-3)

Note: Electrical Equipment and details specified in the table are mostly common for both cranes except plug is used for crane-1 and socket is used by crane-2 for tandem operation. Lifting beam RRC Transmitter is kept on Lifting Beam and RRC Receiver is kept on Crane-1. Separate Sheets are made for Crane-1 and Crane-2 where ever required. Common Sheet for connections between Crane-1 and Crane-2 for tandem operation are made as listed in the tabular form on sheet 2

Crane-1			
Equipment Code	**Location**	**Function**	**Drg-sht**
Protective Panel Circuit of Crane			
-	-	List of other related electrical drawings	1
-	-	Table of contents and Table for Schematic Circuit Diagram for crane-1, crane-2, Crane-1&2, Tandem operation crane-1&2	2
DCOS1	Below DSL at ground level	Changeover of the Source of Supply from feeder-1 or feeder-2 for feed to DSL having electrical load of both cranes.	3
SBS1	Gantry-Col-3	Isolator for Sickbay-Col-1 side-	3
SBS2	Gantry-Col-26	Isolator for Sickbay-Col-29 side	3
DIL1	Gantry-Col-3	R,Y,B phase indicating lamp box in sick bay-Col-1 side	3
DIL2	Gantry-Col-4	R,Y,B phase indicating lamp box in Run bay-Col-1 side	3
DIL3	Gantry-Col-25	R,Y,B phase indicating lamp box in Run bay-Col-29 side	3
DIL4	Gantry-Col-26	R,Y,B phase indicating lamp box in sick bay-Col-29 side	3
MCCB1	PP	Moulded Case circuit breaker for all motion power off	3
MCB7	PP	MCB for Protection of UV coil of MCCB1	3
MCB4	PP	MCB for Protection of 3 phase indicating lamp	3
Il7-R,Y,B	PP	Indicating lamps to show availability of 3 phase power supply to crane.	3
Il8	PP	Indicating lamp for MCCB1 in OFF status	3
Il9	PP	Indicating lamp for MCCB1 in Trip status	3
Il10	PP	Indicating lamp for MCCB1 in ON status	3
SHN	PP	Shunt Trip Coil for tripping MCCB1 from Cabin	3

PB5	Cabin	Push Button to trip MCCB1 as emergency-OFF	3
MC1	PP	Power Contactor for Power supply to Crane without Hoist Block.	3
MC2	PP	Power Contactor for Power supply to Hoist Block without Crane.	3
MPCB1	PP	MPCB for Control Transformer Protection. (TR1A&B)	4
MPCB2	PP	MPCB for Lighting Transformer Protection.(TR2A&B)	4
SS7	PP	Selector Switch for Secondary selection of 110V Control Transformer TR1A or TR1B	4
SS8	PP	Selector Switch for Secondary selection of 240V Lighting Transformer TR2A or TR2B	4
SS9	PP	Selector Switch for Secondary selection of 24V Lighting Transformer TR2A or TR2B	4
TR1A	Crane-Field	Control Transformer-Active	4
TR1B	Crane-Field	Control Transformer-Standby	4
TR2A	Crane-Field	Lighting and 24V Transformer-Active	4
TR2B	Crane-Field	Lighting and 24V Transformer-Standby	4
MCB1	PP	MCB for secondary load protection of Control Transformer TR1A or TR1B	4
MCB2	PP	MCB for secondary load protection of 240V Lighting Transformer TR2A or TR2B	4
MCB3	PP	MCB for secondary load protection of 24V Lighting Transformer TR2A or TR2B	4
6R1	PLC	PLC Relay having changeover contact for crane operation in “Master” or “Slave” mode for crane operation from Cabin only. (linked with selection of SS2 in Master for Master crane and Slave for Slave Crane logic in PLC)	5
SS1	Cabin	Selector Switch for Crane/HB Operation from Cabin or Control given to Ground level for Operation from Crane Pendant/HB Pendant/RRC for Crane/HB	5
d1,d1A	PP	Aux. Contactor for Operation of Crane/HB from Cabin.	5
d2	PP	Aux. Contactor for Operation of Crane/HB from Ground.	5
Il4A	Cabin	Indicating lamp for this crane selected as Slave Crane.	5
SS4	Cabin	Selector Switch for operation from ground from (a) Crane Pendant for Crane operation (b) HB Pendant for HB operation (c) RRC for Crane/HB	5
d3	PP	Aux. Contactor for Operation of crane from Crane Pendant.	5
d4	PP	Aux. Contactor for Operation of crane from HB Pendant.	5
d5,d5A	PP	Aux. Contactor for Operation of crane from Radio Remote Control.	5
SS2	Cabin	Selector Switch to select Crane as “Master” for Tandem Operation or “Individual” as standalone Crane or “Slave” for Tandem Operation.	6
MS	PP	Aux. Contactor for Operation of crane in Tandem mode as Master Crane.	6
d11	PP	Aux. Contactor for Operation of crane in Individual mode as standalone Crane.	6
d10	PP	Aux. Contactor for Operation of crane in Tandem mode as Slave Crane.	6

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5TBS1	Cabin	Selector Switch to bypass of Anti-Collision limit switch for Tandem operation of cranes	6
5IBPb	Cabin	Push Button to bypass Anti-Collision limit switch in Individual operation of crane for attempting to connect cranes in tandem mode.	6
d12	PP	Aux. Contactor for bypass of anti-collision limit switch	6
MLLS	Crane-Field	Mechanical Link Limit Switch	6
d6	PP	Aux. Contactor for Mechanical Link Limit Switch.	6
Il2A	Cabin	Indicating lamp for Mechanical Link Limit Switch.	6
FS	Cabin	Foot Switch for Bell	6
Pb3B	Cr-Pen	Push Button for Bell	6
K1	Cr-RRCP	RRC Relay for Bell	6
7Pb3B	HB Pen	Push Button for Bell	6
B	Crane-Field	Bell/Hooter for alarm from operator.	6
S1A	Cabin	Push Button for Under Bridge lights	6
S1B	Cr-Pen	Push Button for Under Bridge lights	6
K2	Cr-RRCP	RRC Relay for Under Bridge lights	6
S1C	HB-Pen	Push Button for Under Bridge lights	6
LC	PP	Power contactor for Under Bridge lights	6
MCB5	PP	Miniature Circuit Breaker for RRC control circuit.	6
Pb2A	Cabin	Push Button for Crane Power ON	7,7ABC
Pb2B	Cr-Pen	Push Button for Crane Power ON	7,7ABC
K3	Cr-RRCP	RRC Relay for Crane Power ON	7,7ABC
Pb1A	Cabin	Push Button for Crane Power OFF	7,7ABC
Pb0A	Cabin	Push Button for emergency Crane Power OFF	7,7ABC
Pb1B	Cr-Pen	Push Button for Crane Power OFF	7,7ABC
Pb0B	Cr-Pen	Push Button for emergency Crane Power OFF	7,7ABC
CKS1	Cabin-entry	Key removable in off position switch for Crane Power OFF	7,7ABC
2LS1	Trolley	Gravity Limit Switch of Main Hoist for Crane OFF	7,7ABC
3LS1	Trolley	Gravity Limit Switch of Aux. Hoist for Crane OFF	7,7ABC
MC1	PP	Power Contactor for Crane Power ON to bypass controllers in zero position before crane start.	7,7ABC
d7	PP	Aux. Contactor for Crane Power ON	7,7ABC
Il1A	Cabin	Indication lamp for Crane Power ON	7,7ABC
Il1B	Cr-Pen	Indication lamp for Crane Power ON	7,7ABC
d9	PP	Aux. Contactor for all Crane Controllers in off position.	7,7ABC
Il5A	Cabin	Indication lamp for all Crane Controllers in off position.	7,7ABC
TC	PP	Aux. Contactor for Tandem ON.	7,7ABC
Il3A	Cabin	Indication lamp for both Cranes in Tandem mode.	7,7ABC
S8	Cabin	Selector Switch for Motor space Heaters ON-OFF.	8
d8	PP	Aux. Contactor for Space Heater ON.	8
SS3	Cabin	Selector Switch for Jog operation of all motions of crane or monorail.	8
JCPb1	Cabin	Jog operation of any motion of crane in one direction.	8
JCPb2	Cabin	Jog operation of any motion of crane in other direction.	8
SS5	Cabin	Selector Switch for motion selection of crane for jog operation.	8
JHPb1	Cabin	Jog operation of any motion of Hoist Block in one direction.	8
JHPb2	Cabin	Jog operation of any motion of Hoist Block in other direction.	8

THIS IS PART OF TECHNICAL SPECIFICATION PE-TS-437-501-A001A REV 0

SS6	Cabin	Selector Switch for motion selection of Hoist Block for jog operation.	8
Plug-P	Crane-Field	Plug connection of Crane-1 for tandem operation.	9
Socket-S	Crane-Field	Socket connection of Crane-2 for tandem operation.	9
PHL	Crane-Field	Portable Hand lamp of 24V AC with cable and plug.	10
HL1	Crane-Field	Switch Socket 24V AC for hand lamp	10
HL2	Cabin	Switch Socket 24V AC for hand lamp	10
1PL1	PP	Panel light with switch.	10
1TG	PP	Toggle Switch for Panel Heater ON-OFF	10
1TS	PP	Thermostat for auto ON-OFF of Panel Heater	10
1PH	PP	Panel Heater	10
MCB6	PP	MCB for Motor Space Heaters	10
PS1	Crane-Field	Power Switch Socket 5A-240V AC	10
PS2	Crane-Field	Power Switch Socket 5A-240V AC	10
HLPS	Crane-Field	Power Switch Socket 20A-240V AC	10
PS3	Crane-Field	Power Socket 5A-240V AC	10
PS4	Crane-Field	Power Socket 5A-240V AC	10
PS5	Cabin	Power Socket 5A-240V AC	10
PS6	Cabin	Power Socket 5A-240V AC	10
S2	Cabin	Switch for Cabin circulating Fan	10
CF	Cabin	Cabin Circulating fan	10
S3	Cabin	Switch for Exhaust fan	10
EF	Cabin	Exhaust fan	10
S4	Cabin	Switch for Cabin lights	10
CL1,CL2	Cabin	Cabin Lights	10
S5	Cabin	Switch for stair case light.	10
SCL	Crane-Field	Stair case light	10
S6	Cabin	Switch for Bridge Lights	10
BL1,BL2	Crane-field	Bridge Lights	10
S7	Cabin	Switch for Bridge Lights	10
BL3,BL4	Crane-field	Bridge Lights	10
UBL1-4	Crane-field	4 Nos. Under Bridge Lights.	10
Various Operating or signal Indicating boxes.			
PB+LDB	Cabin	Enclosure Panel layout with label designation of operating devices and signal illumination	11
LBDB	Cabin	Enclosure Panel layout with label designation of signal illumination and alarms for Lifting Beam	11
CKSJB	Cabin Entry	Enclosure Panel layout with key (removable in off position) operated push button with label designation for Switching the Crane OFF and removing the key to prevent unauthorised/unintended crane operation.	11
CPBS	Cr-Pen	Crane Pendant layout with label designation of operating devices and signal illumination	11
JPB+HB PBB	Cabin	Enclosure Panel layout with label designation of operating devices including Crane Jog and Hoist Block Jog in both directions of all motions of crane or Hoist Block	11
RRC	Portable	Radio Remote Control Transmitter Enclosure layout with label designation of operating devices and signal illumination of operation of Crane or Hoist Block by Radio frequency	11
Tables	-	Bill of Material of the scheme	12-14

THIS IS PART OF TECHNICAL SPECIFICATION PE-TS-437-501-A001A REV 0

Main Hoist Panel Circuit of Crane			
2MCCB1	MHP	MCCB for Isolation and Protection of Circuit	15
2CH	MHP	Line Choke for Surge Protection.	15
2DR	MHP	Schneider make VVVF Drive block diagram to regulate speeds, protect and administer the motor as per the speed command from operator and apply/release Brake .This device contains various parameters to be configured before commissioning.	15
JBG	Girder	Junction Box for cable termination on Girder	15
JBT	Trolley	Junction Box for cable termination on Trolley.	15
2m	Trolley	Motor for motion direction, speed control and load lifting.	15
2mh	Trolley	Space heater for motor	15
2DBR	Crane-Field	Dynamic Braking Resistor for dissipating the heat generated during lowering/braking actions.	15
2E1	Trolley	Incremental Encoder to operate in closed loop for speed feedback to VVVF to assist in regulating the motor speed.	15
2DR-A	MHP	Human Machine Interface attached to VVVF Drive for monitoring performance and configuring parameters of the VVVF Drive	15
2S1	Trolley	Drum EHT Brake for clamping/releasing the Motor	16
2BRT	MHP	Brake Rectifier for Disc Brake Motor	16
2S2	Trolley	Inbuilt Motor Disc Brake for clamping/releasing the Motor	16
2MCB1	MHP	MCB for Control Circuit isolation and protection	16
2PL1	MHP	Panel Light with Switch for panel illumination.	16
2TG	PP	Toggle Switch for Panel Heater ON-OFF	16
2TS	PP	Thermostat for auto ON-OFF of Panel Heater	16
2PH	PP	Panel Heater	16
2C7	MHP	Power Contactor for Brake ON-OFF	17
2d1	MHP	Aux. Contactor de-energised for Drive fault conditions and stop operations	17
2d2	MHP	Aux. contactor for Cabin mode operation selected	17
2d3	MHP	Aux. contactor for Crane Pendant mode operation selected	17
2d4	MHP	Aux. contactor for Crane RRC mode operation selected	17
2il1	MHP	Indication lamp for Drive Trip.	17
2JHC	MHP	Aux. contactor for Crane Jog in Hoist direction mode operation from cabin selected	17
2JLC	MHP	Aux. contactor for Crane Jog in Lower direction mode operation from cabin selected	17
2b1	Cabin	Master Controller 5 step for this motion in both direction with regulated speed of 5% or 25% or 50% or 75% or 100% in steps 1 to 5 respectively.	18, 18A
2LS2	Trolley	Rotary Limit Switch for stopping the hoist and lower operation at end of upper and lower positions.	18, 18A
2C1	MHP	Aux. Contactor for hoisting and speed reference of 5% in 1st step	18, 18A
2C2	MHP	Aux. Contactor for lowering and speed reference of 5% in 1st step	18, 18A
2C3	MHP	Aux. Contactor for speed reference of 25% alone in 2nd step and 75% jointly with another 4th step Aux. contactor	18, 18A
2C4	MHP	Aux. Contactor for speed reference of 50% alone in 3rd step and 75% jointly with another 4th step Aux. contactor	18, 18A

THIS IS PART OF TECHNICAL SPECIFICATION PE-TS-437-501-A001A REV 0

2C5	MHP	Aux. Contactor for speed reference of 100% in 5th Step	18, 18A
2Pb1	Cr-Pen	Push Button for Hoist direction	18, 18A
2Pb2	Cr-Pen	Push Button for Lower direction	18, 18A
2SPS1	Cr-Pen	Selector Switch with 3 positions for speed reference of 50% or 5% or 100% in direction decided by direction Push Buttons	18, 18A
K4	Cr-RRCP	RRC Relay for Hoist direction and 5% speed	18, 18A
K5	Cr-RRCP	RRC Relay for Lower direction and 5% speed	18, 18A
K6	Cr-RRCP	RRC Relay for speed reference of 100% if energised else 5% if not energised.	18, 18A
Tables	Cabin/ Cr-Pen/MHP	Master Controller Cam Cutting Sequence, Aux. contactor energising sequence with Master controller and Aux. contactor energising sequence with Crane Pendant.	19
P1-4	Lifting Beam	Proxy Sensors for Lifting Beam tilt from Left or right side of Crane-1 and Crane-2	20
LK1-4	LB-RRCP in crane-1 only	RRC Relays for Lifting Beam Tilt from Left or right side of Crane-1. Output is taken by Plug socket to Crane-2 for energising Aux. contactors and Hooter in crane-2	20
DR1-4	MHP	Aux. contactors for Lifting Beam Tilt from Left or right side of Crane-1 and Crane-2	20
DR4A	MHP	Aux. contactors for Lifting Beam Tilt from Left or right side of Crane-1 and Crane-2	20A
2il3-6	Lifting Beam	Indication lamps for Lifting Beam Tilt from Left or right side of Crane-1 and Crane-2	20, 20A
H1	Cabin	Hooter for alarm when lifting beam is tilted.	20, 20A
-	-	Tandem Control Circuit	20B
Tables	-	Bill of Material of the scheme	21-22
Aux. Hoist Panel Circuit of Crane			
3MCCB1	AHP	MCCB for Isolation and Protection of Circuit	23
3CH	AHP	Line Choke for Surge Protection.	23
3DR	AHP	Schneider make VVVF Drive block diagram to regulate speeds, protect and administer the motor as per the speed command from operator and apply/release Brake .This device contains various parameters to be configured before commissioning.	23
3m	Trolley	Motor for motion direction, speed control and load lifting.	23
3mh	Trolley	Space heater for motor	23
3DBR	Crane-Field	Dynamic Braking Resistor for dissipating the heat generated during lowering/braking actions.	23
3E1	Trolley	Incremental Encoder to operate in closed loop for speed feedback to VVVF to assist in regulating the motor speed.	23
3DR-A	AHP	Human Machine Interface to VVVF Drive for monitoring performance and configuring parameters of the VVVF Drive	23
3S1	Trolley	Drum EHT Brake for clamping/releasing the Motor	24
3BRT	AHP	Brake Rectifier for Disc Brake Motor	24
3S2	Trolley	Inbuilt Motor Disc Brake for clamping/releasing the Motor	24
3MCB1	AHP	MCB for Control Circuit isolation and protection	24
3PL1	AHP	Panel Light with Switch for panel illumination.	24
2TG	PP	Toggle Switch for Panel Heater ON-OFF	24
2TS	PP	Thermostat for auto ON-OFF of Panel Heater	24
2PH	PP	Panel Heater	24
3C7	AHP	Power Contactor for Brake ON-OFF	25

THIS IS PART OF TECHNICAL SPECIFICATION PE-TS-437-501-A001A REV 0

3d1	AHP	Aux. Contactor de-energised for Drive fault conditions and stop operations	25
3d2	AHP	Aux. contactor for Cabin mode operation selected	25
3d3	AHP	Aux. contactor for Crane Pendant mode operation selected	25
3d4	AHP	Aux. contactor for Crane RRC mode operation selected	25
3il1	AHP	Indication lamp for Drive Trip.	25
3JHC	AHP	Aux. contactor for Crane Jog in Hoist direction mode operation from cabin selected	25
3JLC	AHP	Aux. contactor for Crane Jog in Lower direction mode operation from cabin selected	25
3b1	Cabin	Master Controller 5 step for this motion in both direction with regulated speed of 5% or 25% or 50% or 75% or 100% in steps 1 to 5 respectively.	26
3LS2	Trolley	Rotary Limit Switch for stopping the hoist and lower operation at end of upper and lower positions.	26
3C1	AHP	Aux. Contactor for hoisting and speed reference of 5% in 1st step	26
3C2	AHP	Aux. Contactor for lowering and speed reference of 5% in 1st step	26
3C3	AHP	Aux. Contactor for speed reference of 25% alone in 2nd step and 75% jointly with another 4th step Aux. contactor	26
3C4	AHP	Aux. Contactor for speed reference of 50% alone in 3rd step and 75% jointly with another 4th step Aux. contactor	26
3C5	AHP	Aux. Contactor for speed reference of 100% in 5th Step	26
3Pb1	Cr-Pen	Push Button for Hoist direction	26
3Pb2	Cr-Pen	Push Button for Lower direction	26
3SPS1	Cr-Pen	Selector Switch with 3 positions for speed reference of 50% or 5% or 100% in direction decided by direction Push Buttons	26
K7	Cr-RRCP	RRC Relay for Hoist direction	26
K8	Cr-RRCP	RRC Relay for Lower direction	26
K9	Cr-RRCP	RRC Relay for speed reference of 5% if not energised else 100% if energised.	26
Tables	Cabin/ Cr-Pen/AHP	Master Controller Cam Cutting Sequence, Aux. contactor energising sequence with Master controller and Aux. contactor energising sequence with Crane Pendant.	27
Tables	As above	Bill of Material of the scheme	28-29
Cross Travel Panel Circuit of Crane			
4MCCB1	CTP	MCCB for Isolation and Protection of Circuit	30
4CH	CTP	Line Choke for Surge Protection.	30
4DR	CTP	Schneider make VVVF Drive block diagram to regulate speeds, protect and administer the motor as per the speed command from operator and apply/release Brake .This device contains various parameters to be configured before commissioning.	30
4OL1-2	CTP	Over Load Relays for Protection of Motors	30
4m1-2	Trolley	Motors for motion direction, speed control and load lifting	30
4DBR	Crane-Field	Dynamic Braking Resistor for dissipating the heat generated during braking actions.	30
4E1	Trolley	Incremental Encoder to operate in closed loop for speed feedback to VVVF to assist in regulating the motor speed.	30

THIS IS PART OF TECHNICAL SPECIFICATION PE-TS-437-501-A001A REV 0

4DR-A	CTP	Human Machine Interface to VVVF Drive for monitoring performance and configuring parameters of the VVVF Drive	30
4S1-2	CTP	Drum EHT Brakes for clamping/releasing the Motors	31
4BRT1-2	CTP	Brake Rectifiers for Disc Brake Motors	31
4S3-4	Trolley	Inbuilt Motor Disc Brakes for clamping/releasing the Motors	31
4MCB1	CTP	MCB for Control Circuit isolation and protection	31
4PL1	CTP	Panel Light with Switch for panel illumination.	31
4TG	PP	Toggle Switch for Panel Heater ON-OFF	31
4TS	PP	Thermostat for auto ON-OFF of Panel Heater	31
4PH	PP	Panel Heater	31
4C7	CTP	Power Contactor for Brake ON-OFF	32
4d1	CTP	Aux. Contactor de-energised for Drive fault conditions and stop operations	32
4d2	CTP	Aux. contactor for Cabin mode operation selected	32
4d3	CTP	Aux. contactor for Crane Pendant mode operation selected	32
4d4	CTP	Aux. contactor for Crane RRC mode operation selected	32
4il1	CTP	Indication lamp for Drive Trip.	32
4JFC	CTP	Aux. contactor for Crane Jog in Forward direction mode operation from cabin selected	32
4JRC	CTP	Aux. contactor for Crane Jog in Reverse direction mode operation from cabin selected	32
4b1	Cabin	Master Controller 4 step for this motion in both direction with regulated speed of 5% or 25% or 50% or 100% in steps 1 to 4 respectively.	33
4LS1	Crane-Field	Lever Limit Switch for stopping the Trolley travel operation in forward direction at end of travel position.	33
4LS2	Crane-Field	Lever Limit Switch for stopping the Trolley travel operation in reverse direction at end of travel position.	33
4C1	CTP	Aux. Contactor for travel in forward direction and speed reference of 5% in 1st step	33
4C2	CTP	Aux. Contactor for travel in reverse direction and speed reference of 5% in 1st step	33
4C3	CTP	Aux. Contactor for speed reference of 25% alone in 2nd step and 75% jointly with another 4th step Aux. contactor	33
4C4	CTP	Aux. Contactor for speed reference of 50% alone in 3rd step and 75% jointly with another 4th step Aux. contactor	33
4C5	CTP	Aux. Contactor for speed reference of 100% in 5th Step	33
4Pb1	Cr-Pen	Push Button for forward direction	33
4Pb2	Cr-Pen	Push Button for lower direction	33
4SPS1	Cr-Pen	Selector Switch with 3 positions for speed reference of 50% or 5% or 100% in direction decided by direction Push Buttons	33
K10	Cr-RRCP	RRC Relay for forward direction	33
K11	Cr-RRCP	RRC Relay for reverse direction	33
K12	Cr-RRCP	RRC Relay for speed reference of 5% if not energised else 100% if energised.	33
Tables	Cabin/ Cr-Pen/CTP	Master Controller Cam Cutting Sequence, Aux. contactor energising sequence with Master controller and Aux. contactor energising sequence with Crane Pendant.	34
Tables	As above	Bill of Material of the scheme	35-36
Long Travel Panel Circuit of Crane			

THIS IS PART OF TECHNICAL SPECIFICATION PE-TS-437-501-A001A REV 0

5MCCB1	LTP	MCCB for Isolation and Protection of Circuit	37
5CH	LTP	Line Choke for Surge Protection.	37
5DR	LTP	Schneider make VVVF Drive block diagram to regulate speeds, protect and administer the motor as per the speed command from operator and apply/release Brake .This device contains various parameters to be configured before commissioning.	37
5ISO1	LTP	Isolating switch for group of 2 motors	37
5ISO2	LTP	Isolating switch for group of 2 motors	37
5OL1-2	LTP	Over Load Relays for Protection of each Motor	37
5OL3-4	LTP	Over Load Relays for Protection of each Motor	37
5m1-4	Crane-Field	Motors for motion direction, speed control and load lifting	37
5DBR	Crane-Field	Dynamic Braking Resistor for dissipating the heat generated during braking actions.	37
5E1	Crane-Field	Incremental Encoder to operate in closed loop for speed feedback to VVVF to assist in regulating the motor speed.	37
5DR-A	LTP	Human Machine Interface to VVVF Drive for monitoring performance and configuring parameters of the VVVF Drive	37
5S1-4	LTP	Drum EHT Brakes for clamping/releasing the Motors	38
5BRT1-4	LTP	Brake Rectifiers for Disc Brake Motors	38
5S5-8	Trolley	Inbuilt Motor Disc Brakes for clamping/releasing the Motors	38
5MCB1	LTP	MCB for Control Circuit isolation and protection	38
5PL1	LTP	Panel Light with Switch for panel illumination.	38
5TG	PP	Toggle Switch for Panel Heater ON-OFF	38
5TS	PP	Thermostat for auto ON-OFF of Panel Heater	38
5PH	PP	Panel Heater	38
5C7	LTP	Power Contactor for Brake ON-OFF	39,39A
5d1	LTP	Aux. Contactor de-energised for Drive fault conditions and stop operations	39,39A
5d2	LTP	Aux. contactor for Cabin mode operation selected	39,39A
5d3	LTP	Aux. contactor for Crane Pendant mode operation selected	39,39A
5d4	LTP	Aux. contactor for Crane RRC mode operation selected	39,39A
5il1	LTP	Indication lamp for Drive Trip.	39,39A
5JLC	LTP	Aux. contactor for Crane Jog in Left direction mode operation from cabin selected	39,39A
5JRC	LTP	Aux. contactor for Crane Jog in Right direction mode operation from cabin selected	39,39A
5LAC1	Crane-Field	Anti-collision device relay getting energised when cranes are in collision range	39,39A
5dAC	LTP	Aux. contactor for cranes in non-collision range	39,39A
5H1	Cabin	Hooter for cranes in anti-collision range.	39,39A
5b1	Cabin	Master Controller 4 step for this motion in both direction with regulated speed of 5% or 25% or 50% or 100% in steps 1 to 4 respectively.	40,40A
5C1	LTP	Aux. Contactor for travel in left direction and speed reference of 5% in 1st step	40,40A
5LS2	Crane-Field	Lever Limit Switch for stopping the Trolley travel operation in right direction at end of travel position.	40,40A
5C2	CTP	Aux. Contactor for travel in right direction and speed reference of 5% in 1st step	40,40A

THIS IS PART OF TECHNICAL SPECIFICATION PE-TS-437-501-A001A REV 0

5C3	CTP	Aux. Contactor for speed reference of 25% alone in 2nd step and 75% jointly with another 4th step Aux. contactor	40,40A
5C4	CTP	Aux. Contactor for speed reference of 50% alone in 3rd step and 75% jointly with another 4th step Aux. contactor	40,40A
5C5	CTP	Aux. Contactor for speed reference of 100% in 5th Step	40,40A
5Pb1	Cr-Pen	Push Button for left direction	40,40A
5Pb2	Cr-Pen	Push Button for right direction	40,40A
5SPS1	Cr-Pen	Selector Switch with 3 positions for speed reference of 50% or 5% or 100% in direction decided by direction Push Buttons	40,40A
K13	Cr-RRCP	RRC Relay for forward direction	40,40A
K14	Cr-RRCP	RRC Relay for lower direction	40,40A
K15	Cr-RRCP	RRC Relay for speed reference of 5% if not energised else 100% if energised.	40,40A
Tables	Cabin/ Cr-Pen/LTP	Master Controller Cam Cutting Sequence, Aux. contactor energising sequence with Master controller and Aux. contactor energising sequence with Crane Pendant.	41
Tables	As above	Bill of Material of the scheme	42-43
PLC Panel Circuit of Crane			
Block-drg	As above	Block Diagram of PLC connection to operate both cranes in tandem.	44
6MCB1	PLCP	MCB for Control Circuit isolation and protection	45,45A
6H1	Cabin	Hooter with indication (Audio-visual) to inform lifting beam level difference exceeding pre-set limit	45,45A
6PL1	PLCP	Panel Light with Switch for panel illumination.	45,45A
6TG	PLCP	Toggle Switch for Panel Heater ON-OFF	45,45A
6TS	PLCP	Thermostat for auto ON-OFF of Panel Heater	45,45A
6PH	PLCP	Panel Heater	45,45A
6PSU	PLCP	switch-mode power supply for 24V DC supply to PLC	45,45A
6MCB2	PLCP	MCB for Control Circuit isolation and protection	45,45A
6R1	PLCP	Relay to energise when parent crane is selected as Master (MS energised)	45,45A
6R2	PLCP	Alarm from PLC for lifting beam tilt beyond permissible limit.	45,45A
6Pb1	Cabin	Push Button for reset of the PLC after clearing fault	45,45A
6PL1	PLCP	Panel Light with Switch for panel illumination.	45,45A
Communication	PLCP	PLC Model: Logic Controller M-241 PLC of Schneider make is used on each crane. Hardware: Ethernet network Cables, Ports etc are used to carry broadband signals from PLC to Drives and vice versa. Connectors: RJ-45 crimped connectors are used for communication between ports to ports. Protocol: TCP/IP Protocol suite is used which is commonly used for the set of network protocols (wide area network) that compose the **Internet Protocol suite.** Software: Schneider have developed special software and customised logic for 2 cranes working in tandem (a) identification of Master and Slave Cranes (b) to trip operation if the level difference of the lifting beams exceeds pre-set limit.	45,45A
Tables	As above	Bill of Material of the scheme	46

THIS IS PART OF TECHNICAL SPECIFICATION PE-TS-437-501-A001A REV 0

THIS IS PART OF TECHNICAL SPECIFICATION PE-TS-437-501-A001A REV 0

Spare		Spare Sheet	47
Protective Panel Circuit of Hoist Block			
7MCB1	HBP	MCB for Control Circuit isolation and protection	48
7Pb2A	Cabin	Push Button for Hoist Block Power ON	48
7Pb2B	HB-Pen	Push Button for Hoist Block Power ON	48
K16	Cr-RRCP	RRC Relay for Hoist Block Power ON	48
7Pb1A	Cabin	Push Button for Hoist Block Power OFF	48
7Pb1B	HB-Pen	Push Button for Hoist Block Power OFF	48
7Pb0A	Cabin	Emergency Push Button for Hoist Block Power OFF	48
7Pb0B	HB-Pen	Emergency Push Button for Hoist Block Power OFF	48
8LS1	HB	Gravity Limit Switch of Hoist block for Crane OFF	48
7il1B	Cabin	Indication lamp for Hoist Block Power ON	48
7il1A	HB-Pen	Indication lamp for Hoist Block Power ON	48
MC2	HBP	Power Contactor for Power supply to Hoist Block	48
7PL1	HBP	Indicating lamp	49
7PL2	HBP	Panel Light with Switch for panel illumination.	49
7TG	PP	Toggle Switch for Panel Heater ON-OFF	49
7TS	PP	Thermostat for auto ON-OFF of Panel Heater	49
7PH	PP	Panel Heater	49
HBPBS	HB-Pen	HB Pendant with label designation of operating devices and signal illumination	49
HBPBB	Cabin	Hoist Block Push Button Station with label designation of operating devices and signal illumination	49
RRC	Portable	Radio Remote Control Enclosure Transmitter with label designation of operating devices and signal illumination of operation of Crane or Hoist Block by Radio frequency (Refer sheet 11)	49
Tables	As above	Bill of Material of the scheme	50
Hoist Panel Circuit of Hoist block			
8MCB2	HBP	MCCB for Isolation and Protection of Circuit	51
8CH	HBP	Line Choke for Surge Protection.	51
8DR	HBP	Schneider make VVVF Drive to regulate speeds, protect and administer the motor as per the speed command from operator and apply/release Brake .This device contains various parameters to be configured before commissioning.	51
8m	HB	Motor for motion speed control and load lifting.	51
8DBR	HB	Dynamic Braking Resistor for dissipating the heat generated during braking actions.	51
8E1	HB	Incremental Encoder to operate in closed loop for speed feedback to VVVF to assist in regulating the motor speed.	51
8DR-A	HBP	Human Machine Interface to VVVF Drive for monitoring performance and configuring parameters of the VVVF Drive	51
8BRT	HBP	Brake Rectifiers for Disc Brake Motors	52
8S	HB	Inbuilt Motor Disc Brake for clamping/releasing the Motor	52
8MCB1	HBP	MCB for Control Circuit isolation and protection	52
8C7	HBP	Power Contactor for Brake ON-OFF	53
8d1	HBP	Aux. Contactor de-energised for Drive fault conditions and stop operations	53
8d2	HBP	Aux. contactor for Cabin mode operation selected	53
8d3	HBP	Aux. contactor for Crane Pendant mode operation selected	53

8d4	HBP	Aux. contactor for Crane RRC mode operation selected	53
8il1	HBP	Indication lamp for Drive Trip.	53
8JHC	HBP	Aux. contactor for Crane Jog in Hoist direction mode operation from cabin selected	53
8JLC	HBP	Aux. contactor for Crane Jog in Lower direction mode operation from cabin selected	53
8b1	Cabin	Master Controller 4 step for Hoist Block Hoist motion in both direction with regulated speed of 5% or 25% or 50% or 100% in steps 1 to 4 respectively.	54
8LS2	HB	Rotary Limit Switch for stopping the hoist and lower operation at end of upper and lower positions.	54
8C1	HBP	Aux. Contactor for hoisting and speed reference of 5% in 1st step	54
8C2	HBP	Aux. Contactor for lowering and speed reference of 5% in 1st step	54
8C3	HBP	Aux. Contactor for speed reference of 25% alone in 2nd step and 75% jointly with another 4th step Aux. contactor	54
8C4	HBP	Aux. Contactor for speed reference of 50% alone in 3rd step and 75% jointly with another 4th step Aux. contactor	54
8C5	HBP	Aux. Contactor for speed reference of 100% in 5th Step	54
8Pb1	HB-Pen	Push Button for Hoist direction	54
8Pb2	HB-Pen	Push Button for Lower direction	54
8SPS1	HB-Pen	Selector Switch with 3 positions for speed reference of 50% or 5% or 100% in direction decided by direction Push Buttons	54
K17	Cr-RRCP	RRC Relay for Hoist direction	54
K18	Cr-RRCP	RRC Relay for Lower direction	54
K19	Cr-RRCP	RRC Relay for speed reference of 5% if not energised else 100% if energised.	54
Tables	Cabin/ HB-Pen/HBP	Master Controller Cam Cutting Sequence, Aux. contactor energising sequence with Master controller and Aux. contactor energising sequence with HB Pendant.	55
Tables	As above	Bill of Material of the scheme	56-57
Cross Travel Panel Circuit of Hoist block			
9MCB2	HBP	MCCB for Isolation and Protection of Circuit	58
9CH	HBP	Line Choke for Surge Protection.	58
9DR	HBP	Schneider make VVVF Drive to regulate speeds, protect and administer the motor as per the speed command from operator and apply/release Brake .This device contains various parameters to be configured before commissioning.	58
9m	HB	Motor for motion speed control and load lifting.	58
9DBR	HB	Dynamic Braking Resistor for dissipating the heat generated during braking actions.	58
9E1	HB	Incremental Encoder to operate in closed loop for speed feedback to VVVF to assist in regulating the motor speed.	58
9DR-A	HBP	Human Machine Interface to VVVF Drive for monitoring performance and configuring parameters of the VVVF Drive	58
9BRT	HBP	Brake Rectifiers for Disc Brake Motors	59
9S	HB	Inbuilt Motor Disc Brake for clamping/releasing the Motor	59
9MCB1	HBP	MCB for Control Circuit isolation and protection	59
9C7	HBP	Power Contactor for Brake ON-OFF	60

THIS IS PART OF TECHNICAL SPECIFICATION PE-TS-437-501-A001A REV 0

9d1	HBP	Aux. Contactor de-energised for Drive fault conditions and stop operations	60
9d2	HBP	Aux. contactor for Cabin mode operation selected	60
9d3	HBP	Aux. contactor for Crane Pendant mode operation selected	60
9d4	HBP	Aux. contactor for Crane RRC mode operation selected	60
9il1	HBP	Indication lamp for Drive Trip.	60
9JFC	HBP	Aux. contactor for Crane Jog in Forward direction mode operation from cabin selected	60
9JRC	HBP	Aux. contactor for Crane Jog in Reverse direction mode operation from cabin selected	60
9b1	Cabin	Master Controller 4 step for Hoist Block Cross Travel motion in both direction with regulated speed of 5% or 25% or 50% or 100% in steps 1 to 4 respectively.	61
9b1	Cabin	Master Controller 4 step for this motion in both direction with regulated speed of 5% or 25% or 50% or 100% in steps 1 to 4 respectively.	61
9LS	HB	Lever Limit Switch for stopping the Trolley travel operation in forward and reverse directions at end of travel position.	61
9C1	HBP	Aux. Contactor for hoisting and speed reference of 5% in 1st step	61
9C2	HBP	Aux. Contactor for lowering and speed reference of 5% in 1st step	61
9C3	HBP	Aux. Contactor for speed reference of 25% alone in 2nd step and 75% jointly with another 4th step Aux. contactor	61
9C4	HBP	Aux. Contactor for speed reference of 50% alone in 3rd step and 75% jointly with another 4th step Aux. contactor	61
9C5	HBP	Aux. Contactor for speed reference of 100% in 5th Step	61
9Pb1	HB-Pen	Push Button for Hoist direction	61
9Pb2	HB-Pen	Push Button for Lower direction	61
9SPS1	HB-Pen	Selector Switch with 3 positions for speed reference of 50% or 5% or 100% in direction decided by direction Push Buttons	61
K20	Cr-RRCP	RRC Relay for Hoist direction	61
K21	Cr-RRCP	RRC Relay for Lower direction	61
K22	Cr-RRCP	RRC Relay for speed reference of 5% if not energised else 100% if energised.	61
Tables	Cabin/ HB-Pen/HBP	Master Controller Cam Cutting Sequence, Aux. contactor energising sequence with Master controller and Aux. contactor energising sequence with HB Pendant.	62
Tables	As above	Bill of Material of the scheme	63-64
Operating Devices in Cabin for crane operator			
Pb5	Cabin	Push Button for Switching OFF crane power supply from MCCB1 circuit breaker through shunt trip coil	11
SS1	Cabin	Selector Switch for (a) Cabin Operation or (b) Off or (c) Ground Operation	11
SS2	Cabin	Selector Switch for crane operation selection as (a) Master or (b) Individual or (c) slave.	11
5TBS1	Cabin	Selector Switch for bypassing anti-collision device in tandem mode	11

THIS IS PART OF TECHNICAL SPECIFICATION PE-TS-437-501-A001A REV 0

5IBPb	Cabin	Push Button for bypassing anti-collision device in individual mode or for preparation of operation in tandem mode while running the crane in individual mode.	11
iI2A	Cabin	Indicating Lamp for mechanical link engaged for tandem operation.	11
B	Cabin	Bell/Hooter for crane operation alert alarm	6
FS	Cabin	Foot Switch to sound Alarm (equipment B) during crane operation	6
S1A	Cabin	Selector Switch for Under Bridge lights (UBL1 to UBL4) ON-OFF	11
Pb2A	Cabin	Push Button for Power Supply-ON of the crane	11
Pb1A	Cabin	Push Button for Power Supply-OFF of the crane	11
Pb0A	Cabin	Push Button for Emergency Power Supply-OFF of the crane	11
CKS1	Cabin (entry)	Key removable in off position switch for Crane Power OFF	11
iI1A	Cabin	Indicating Lamp for Crane Ready for operation (ON)	11
iI5A	Cabin	Indicating Lamp for all crane controllers in zero notch position.	11
iI3A	Cabin	Indicating Lamp for Crane operation in Tandem mode-ON	11
iI4A	Cabin	Indicating Lamp for Slave Crane working as “Slave” from Cabin in Tandem mode	11
SS3	Cabin	Selector Switch for Crane Jog-OFF-HB Jog mode selection	11
JCPb1	Cabin	Push Button for Jog operation of any one motion of crane in one direction	11
JCPb2	Cabin	Push Button for Jog operation of any one motion of crane in other direction	11
JHPb1	Cabin	Push Button for Jog operation of any one motion of Hoist Block in one direction	11
JHPb2	Cabin	Push Button for Jog operation of any one motion of Hoist Block in other direction	11
SS5	Cabin	Selector Switch for jog operation of any one motion of crane.	11
SS6	Cabin	Selector Switch for jog operation of any one motion of Hoist Block.	11
S8	Cabin	Selector Switch for Motor Space Heaters ON-OFF	11
S2	Cabin	Selector Switch for Cabin Ventilation fan ON-OFF	11
S3	Cabin	Selector Switch for Cabin Exhaust fan ON-OFF	11
S4	Cabin	Selector Switch for Cabin Lights ON-OFF	11
S5	Cabin	Selector Switch for Stair Case Lights ON-OFF	11
S6	Cabin	Selector Switch for Bridge Lights set-1 (BL1,BL2) ON-OFF	11
S7	Cabin	Selector Switch for Bridge Lights set-2 (BL3,BL4) ON-OFF	11
LCP	Cabin	Load Cell Controller Panel with MH,AH and MH+AH load weight small Display	16
LCD	Crane	Display Panel for MH+AH load weight large Display	16
2b1	Cabin	Master Controller for Main Hoist motion operation for speeds of 5%, 25%, 50%, 75%, 100% in both directions from 1st step to 5th step respectively	7,7A,18
2il3	Cabin	Indication lamp for level difference of lifting beam-Left	11
2il4	Cabin	Indication lamp for level difference of lifting beam-Right	11
2il5	Cabin	Indication lamp for level difference of lifting beam-Left Trip	11
2il6	Cabin	Indication lamp for level difference of lifting beam-Right Trip	11
H1	Cabin	Hooter for lifting beam tilt Alarm	11

THIS IS PART OF TECHNICAL SPECIFICATION PE-TS-437-501-A001A REV 0

6H1	Cabin	Hooter for lifting beam level difference trip	11
3b1	Cabin	Master Controller for Aux. Hoist motion operation for speeds of 5%, 25%, 50%, 75%, 100% in both directions from 1st step to 5th step respectively	7,7A,26
4b1	Cabin	Master Controller for Cross Travel motion operation for speeds of 5%, 25%, 50%, 100% in both directions from 1st step to 4th step respectively	7,7A,33
5b1	Cabin	Master Controller for Long Travel motion operation for speeds of 5%, 25%, 50%, 100% in both directions from 1st step to 4th step respectively	7,7A,40 ,40A
6Pb1	Cabin	Push Button for reset of PLC/Lifting Beam tilt Trip Hooter	11
8b1	Cabin	Master Controller for Hoist Block in Hoist motion operation for speeds of 5%, 25%, 50%, 100% in both directions from 1st step to 4th step respectively	48,54
9b1	Cabin	Master Controller for Hoist Block in Cross Travel motion operation for speeds of 5%, 25%, 50%, 100% in both directions from 1st step to 4th step respectively	48,61
7il1A	Cabin	Indicating Lamp for Hoist Block ready for operation (ON)	11
7Pb2A	Cabin	Push Button for Hoist Block ON	11
7Pb1A	Cabin	Push Button for Power Supply-OFF of the Hoist Block	11
7Pb0A	Cabin	Push Button for Emergency Power Supply-OFF of the Hoist Block	11
Operating Devices on Crane Pendant for crane operator			
SS4	Cr-Pen	Selector Switch for operation from (a) Crane Pendant or (b) Hoist Block Pendant or (c) Radio Remote Control	11
Pb3B	Cr-Pen	Push Button to sound Alarm (equipment B) during crane operation	11
S1B	Cr-Pen	Selector Switch for Under Bridge lights (UBL1 to UBL4) ON-OFF	11
Pb2B	Cr-Pen	Push Button for Power Supply-ON of the crane	11
PB1B	Cr-Pen	Push Button for Power Supply-OFF of the crane	11
PB0B	Cr-Pen	Push Button for Emergency Power Supply-OFF of the crane	11
il1B	Cr-Pen	Indicating Lamp for Crane Ready for operation (ON)	11
2Pb1	Cr-Pen	Push Button for all speeds of Main Hoist in Hoist	11
2Pb2	Cr-Pen	Push Button for all speeds of Main Hoist in Lower	11
2SPS1	Cr-Pen	Selector Switch for varying speed of Main Hoist in both directions for (a) 50% speed or (b) 5% speed or (c) 100% speed	11
3Pb1	Cr-Pen	Push Button for all speeds of Aux. Hoist in Hoist	11
3Pb2	Cr-Pen	Push Button for all speeds of Aux. Hoist in Lower	11
3SPS1	Cr-Pen	Selector Switch for varying speed of Aux. Hoist in both directions for (a) 50% speed or (b) 5% speed or (c) 100% speed	11
4Pb1	Cr-Pen	Push Button for all speeds of Cross Travel in Forward	11
4Pb2	Cr-Pen	Push Button for all speeds of Cross Travel in Reverse	11
4SPS1	Cr-Pen	Selector Switch for varying speed of Cross Travel in both directions for (a) 50% speed or (b) 5% speed or (c) 100% speed	11
5Pb1	Cr-Pen	Push Button for all speeds of Long Travel in Left	11
5Pb2	Cr-Pen	Push Button for all speeds of Long Travel in Right	11
5SPS1	Cr-Pen	Selector Switch for varying speed of Long Travel in both directions for (a) 50% speed or (b) 5% speed or (c) 100% speed	11

THIS IS PART OF TECHNICAL SPECIFICATION PE-TS-437-501-A001A REV 0

Operating Devices on Hoist Block Pendant for crane operator			
7Pb2B	HB-Pen	Push Button for Hoist Block ON	49
7il1B	HB-Pen	Indicating Lamp for Hoist Block ready for operation (ON)	49
7Pb1B	HB-Pen	Push Button for Power Supply-OFF of the Hoist Block	49
7Pb0B	HB-Pen	Push Button for Emergency Power Supply-OFF of the Hoist Block	49
7Pb3B	HB-Pen	Push Button to sound Alarm (equipment B) during Hoist Block operation	49
S1C	HB-Pen	Selector Switch for Under Bridge lights (UBL1 to UBL4) ON-OFF	11
8Pb1	Cr-Pen	Push Button for all speeds of Hoist Block in Hoist	49
8Pb2	Cr-Pen	Push Button for all speeds of Hoist Block in Lower	49
8SPS1	Cr-Pen	Selector Switch for varying speed of Hoist Block Hoist in both directions for (a) 50% speed or (b) 5% speed or (c) 100% speed	49
9Pb1	Cr-Pen	Push Button for all speeds of Hoist Block Cross Travel in Forward	49
9Pb2	Cr-Pen	Push Button for all speeds of Hoist Block Cross Travel in Reverse	49
9SPS1	Cr-Pen	Selector Switch for varying speed of Hoist Block Cross Travel in both directions for (a) 50% speed or (b) 5% speed or (c) 100% speed	49
Operating Devices on RRC Pendant for crane/Hoist Block operator			
Start/Alarm	RRC (K1)	Push Button to sound Alarm (B) during crane operation (after start of the Crane/Hoist Block Power Supply on subsequent press)	11, 49
Lights	RRC (K2)	Push Button for Under Bridge lights (UBL1 to UBL4) ON-OFF	11, 49
Start/Alarm	RRC (K3 or K16)	Push Button for Power Supply-ON of the crane and Hoist Block for first time press and then further presses shall sound alarm	11, 49
MH/MRH	RRC (K3 or K16)	Push Button for Operation selection of the crane or Hoist Block by Toggle press of the Push Button	11, 49
Stop	RRC (K3 & K16)	Push Button for Power Supply-OFF of the crane and Hoist Block	11, 49
Hoist-MH	RRC (k4,K6)	Push Button-1st press for Main Hoist in Hoist at 5% speed (K4) and 2nd Press at 100% speed (K4+K6).	11
Lower-MH	RRC (K5,K6)	Push Button-1st press for Main Hoist in Lower at 5% speed (K5) and 2nd Press at 100% speed (K5+K6).	11
Hoist-AH	RRC (k7,K9)	Push Button-1st press for Aux. Hoist in Hoist at 5% speed (K7) and 2nd Press at 100% speed (K7+K9).	11
Lower-AH	RRC (K8,K9)	Push Button-1st press for Aux. Hoist in Lower at 5% speed (K8) and 2nd Press at 100% speed (K8+K9).	11
Forward-CT	RRC (k10,K12)	Push Button-1st press for Cross Travel in Forward at 5% speed (K10) and 2nd Press at 100% speed (K10+K12).	11
Reverse-CT	RRC (K11,K12)	Push Button-1st press for Cross Travel in Reverse at 5% speed (K11) and 2nd Press at 100% speed (K11+K12).	11
Left-LT	RRC (k13,K15)	Push Button-1st press for Long Travel in Left at 5% speed (K13) and 2nd Press at 100% speed (K13+K15).	11
Right-LT	RRC (K14,K15)	Push Button-1st press for Long Travel in Right at 5% speed (K13) and 2nd Press at 100% speed (K13+K15).	11

THIS IS PART OF TECHNICAL SPECIFICATION PE-TS-437-501-A001A REV 0

Hoist-HB	RRC (K17,K19)	Same Push Button of Crane Hoist-MH with toggle MH/MRH selection. Push Button-1st press for Hoist Block in Hoist at 5% speed (K17) and 2nd Press at 100% speed (K17+K19).	11
Lower-HB	RRC (k18,K19)	Same Push Button of Crane Hoist-MH with toggle MH/MRH selection. Push Button-1st press for Hoist Block in Lower at 5% speed (K18 and 2nd Press at 100% speed (K18+K19).	11
Forward-HB	RRC (K20,K22)	Same Push Button of Crane Forward-CT with toggle MH/MRH selection. Push Button-1st press for Hoist Block Cross Travel in Forward at 5% speed (K20) and 2nd Press at 100% speed (K20+K22).	11
Reverse-HB	RRC (k21,K22)	Same Push Button of Crane Reverse-CT with toggle MH/MRH selection. Push Button-1st press for Hoist Block Cross Travel in Reverse at 5% speed (K21 and 2nd Press at 100% speed (K21+K22).	11

Notes for Crane-1 and Crane-2

A-Common features between Crane-1 and Crane-2: (a) Nomenclature and logic of crane-1 is applied for crane-2 also as indicated in above table. (b) Any crane viz crane-1 or crane-2 can be operated in master mode and other crane in slave mode (c) Each Crane-1 and Crane-2 is equipped with its own PLC for communication between cranes in tandem mode through Ethernet switches and Plug Sockets.(d) Lifting Beam along with transmitter for tilting status of Lifting Beam is connected in Tandem mode only.

B-Different features between Crane-1 and Crane-2: (a) Crane-1 is having plug and crane-2 is having socket for electrical connections to operate crane in tandem mode permitted from cabin mode only. (b) Lifting beam RRC Receiver Panel is located on Crane-1 and sends control signals to crane-2 from control supply of crane-1 for Lifting Beam status indicating lamps in crane-2 cabin through plug and socket connection.

THIS IS PART OF TECHNICAL SPECIFICATION PE-TS-437-501-A001A REV 0

PRE-BID CLARIFICATION SCHEDULE

S. NO.	SECTION/CLAUSE/PAGE NO.	STATEMENT OF THE REFERRED CLAUSE	CLARIFICATION REQUIRED

The bidder hereby clarifies that above mentioned are the only clarifications required on the technical specification for the subject package.

Signature: _____

Name: _____

Designation: _____

Company: _____

Date: _____

Company Seal

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