
COMMON LOGIC PTY LTD

ACN. 011 029 262

Electrical Contractors

***Contract No: BW.60095-05/06
PS105 Raubers Rd***

Electrical Manual

ISSUE NO 1
AS BUILT
15/11/2006

**Unit 9/58 Wecker Road, Mansfield, Queensland 4122
Telephone (07) 3849 7449 Fax (07) 3343 5210
JH86**

JH86Mj04

**COMMON LOGIC Pty Ltd
Specialist Electrical Contractors****Electrical Manual**

Subject: Raubers Rd SP105

Sheet: 1
Of: 10Section
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Page Revision No:

Date: 17/11/06

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Authorised By: Grant Kerr

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1.0 GENERAL

The following document describes the operation of the switchgear and relays installed into the change over switchgear cubicle.

The document does NOT describe the detailed operation of the generator PLC or the operation of the pump starters on the site.

The generator is a plug in device and can be removed from site by BW at their discretion.

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2.0

OPERATIONAL DESCRIPTION

There are four components to the system. These are the Generator, RTU, Pump MCC, and the Generator change over switchgear. The last component will be described within this document in detail. The remaining devices will be described in the BW manual.

2.1

GENERATOR

The generator and associated PLC controls all automatic aspects of the change over switchgear, in effect making the basic transfer switch into an Automatic Transfer switch (ATS). The ATS will only operate if the generator PLC is fully operational.

The operation of the ATS is NOT fail safe and will NOT return to a predetermined condition on failure of the generator PLC or associated wiring.

The transfer switch is a solenoid operated load break switch. The switch has Two positions only being "A" Mains and "B" Generator. There is NO "OFF" position.

Mains fail timing and return to mains timing is all controlled within the generator PLC.

2.2

RTU

The RTU monitors several generator alarm conditions and will report these conditions to the system as required.

The RTU can remotely start and stop the generator. The remote start will initiate a change over of the station to the generator. Stopping the generator will initiate a return to mains if available.

2.3

PUMP STARTER MCC

The pump starter MCC automatically starts and stops the pumps on demand determined by the wet well levels.

The starter has not been modified in any way to accommodate the generator ATS with the exception of the re-routing of the sub-mains cabling.

2.3.1.

MCC MAIN SWITCH

The Main Switch in all cases refers to the Energex supply point of isolation.

The existing main switch in the pump starter MCC, when labelled as the "Main Switch", will isolate the incoming Energex Mains Supply.

For complete isolation of the switchboards where an automatic generator system is supplied the generator must also be isolated.

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This must be carried out at the generator CB in the generator canopy as well as switching the control to the "OFF" position.

2.3.2. MAINS AVAILABLE INDICATOR

The mains available indicator mounted on the common control escutcheon is supplied by 24VDC originating from the RTU control supply.

The signal will be "ON" when the mains are healthy.

The mains available relay does indicate availability and correct rotation after 10 seconds.

2.3.3. MAINS FAIL IN MCC

The mains fail relay in the MCC is the device that assures the system has the correct rotation and supply available for the pumps to operate.

When re-connecting the generator to a site it is necessary to check the generator voltage rotation is also correct.

2.3.4. GENERATOR RUNNING.

The generator running indicator is supplied by 24VDC originating from the RTU control supply.

The indicator will be "ON" when the generator is running as determined by the generator PLC. IE GRR relay is on.

2.4 ATS CUBICLE

The ATS cubicle comprises sections as described below.

2.4.1. GENERATOR INTERFACE

The generator interface is via a Clipsal 27 Pin plug and socket.

The multicore cable is connected core 1 to pin 1 and 2-2 etc.

The Multicore cable is labelled wire No. G01 for core 1 to pin 1 and No.G02 –Core2-Pin2 etc.

This enables simple and quick reference to all wiring between the plug and the hardware within the ATS cubicle.

All signals received from the generator are arranged to switch a relay powered from the generator 24VDC system.

The exception to this is the "Generator Not On Site" signal, which wires directly to the RTU via the interface terminals.

All control signals to the Generator are via clean contacts. Both sides of the contact are issued to the generator. These contacts switch relays in the generator panel and are powered via the generator 24VDC system.

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2.4.2. RTU INTERFACE

The RTU interface is via a hard wired loom or multicore cable and terminals. The Loom cable is numbered with the terminal RTU IO numbers. The RTU connections are different for each site and may also have different polarities for each site according to the site hardware.

All signals received from the RTU are arranged to switch a relay powered from the RTU 24VDC system. IE Remote Exercise Generator only. All signals to the RTU are via clean contacts. Both sides of the contact are issued to the RTU system. These contacts switch directly into the RTU Input cards. The voltage on these signal cables is 24VDC supplied from the RTU power supply.

2.4.3. ATS AND CONTROL

The transfer switch is a MAC-DT Solenoid operated Transfer switch. The control of this switch is only achieved from the generator PLC. The PLC controls the relays CTSN and CTSG within the ATS panel.

Energising CTSN if the Mains Volts are available will open the Generator CB and Close the Mains CB.

Energising CTSG if the Generator Volts are available will open the Mains CB and Close the Generator CB.

If volts are not available the motors in the BTS will not operate. (IE stay in the last condition).

If the BTS does not operate the PLC will remove the transfer signal and assume a fault condition. This condition required manual operator intervention.

Manual Operation:

**If manual operation is desired then the following steps must be carried out.
Please note that it is not necessary to remove any covers when manually operating the CB's.**

If the PLC is issuing an undesirable status then the operation of the CB solenoids must first be isolated. This is best achieved by switching the CB's QM1 and QG1 to the off position. This removes the motor charge and open close commands to the operators. If the PLC is not affecting the transfer switch these CB's may be left in the ON state.

Manual Open Mains and Close Generator:

Turn off the CB's QM1 & QG1. To change state a suitably qualified operator must open the escutcheon door and using the Yellow handled operator, place the operator on the left side square shaft and pull the handle towards the bottom of the switch. This will change the state of the switch as indicated by the windows marked "A" and "B".

Manual Open Generator and Close Mains:

Turn off the CB's QM1 & QG1. To change state a suitably qualified operator must open the escutcheon door and using the Yellow handled operator, place the operator

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on the left side square shaft and pull the handle towards the bottom of the switch. This will change the state of the switch as indicated by the windows marked "A" and "B".

Mains Fail detection:

The mains fail relay detects the condition of the mains and issues a mains fail start signal to the PLC.

The mains fail relay also operates the mains available indicator on the MCC common control panel.

The mains fail signal also issues a condition to the RTU to indicate mains failed when the relay is de-energised.

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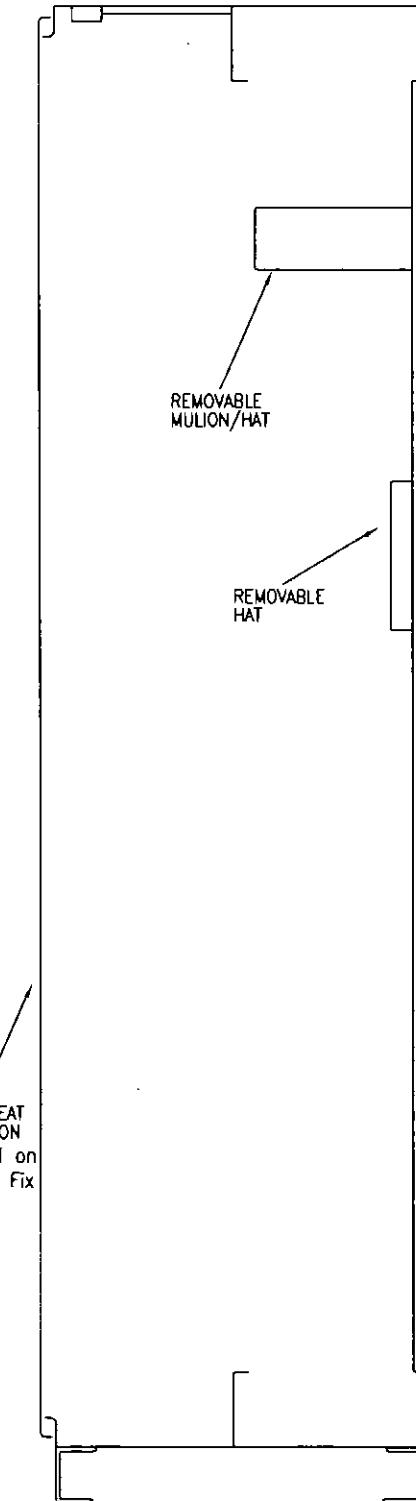
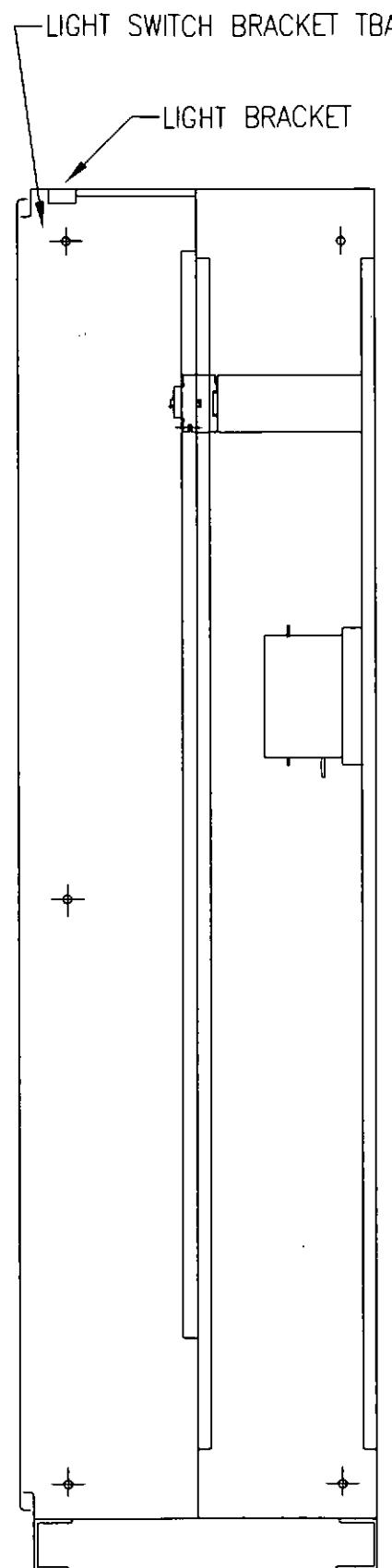
Manual Issue No: 1 Date: 17/11/06

3.0 DRAWINGS

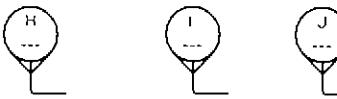
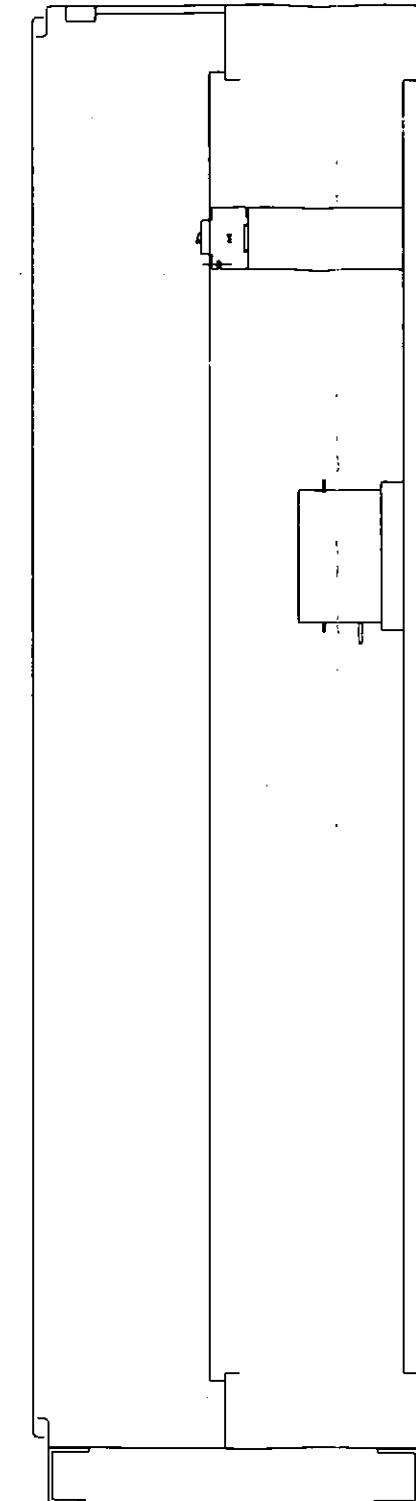
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DOOR HEAT INSULATION
Note: Required on external sites. Fix to door with studs.



APPLICABLE SITES
RAUBERS RD

SECTION A-A

			FINN	LINN	SINN	PTN
1/9/06	C	AS INSTALLED				
26/04/06	B	ISSUED FOR CONSTRUCTION				
11/04/06	A	ISSUED FOR APPROVAL				

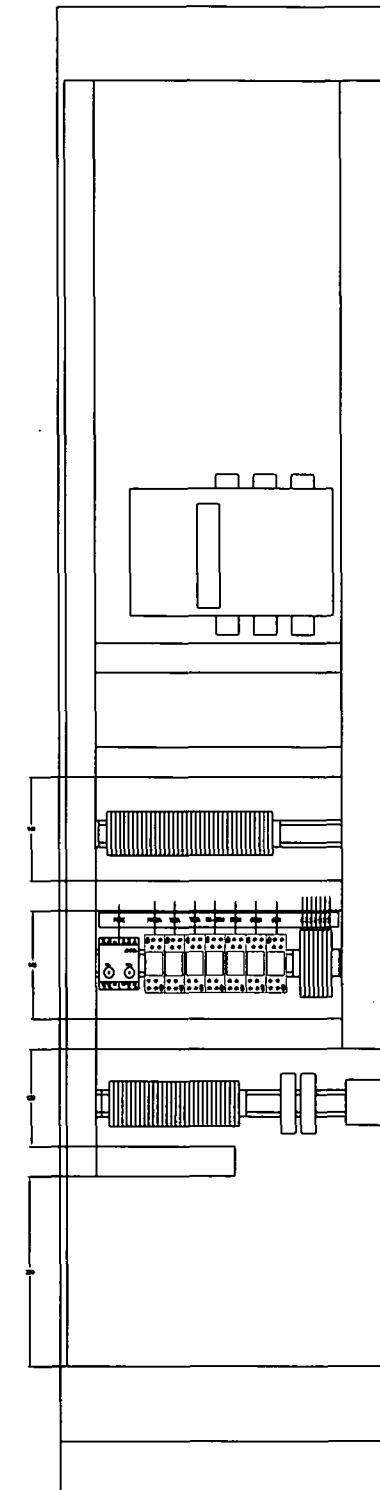
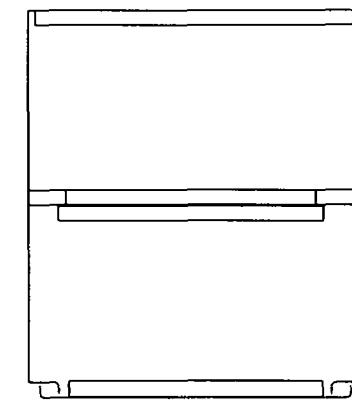
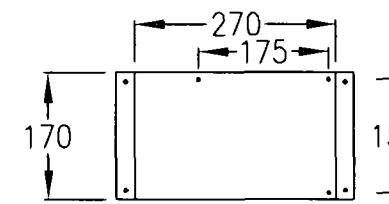
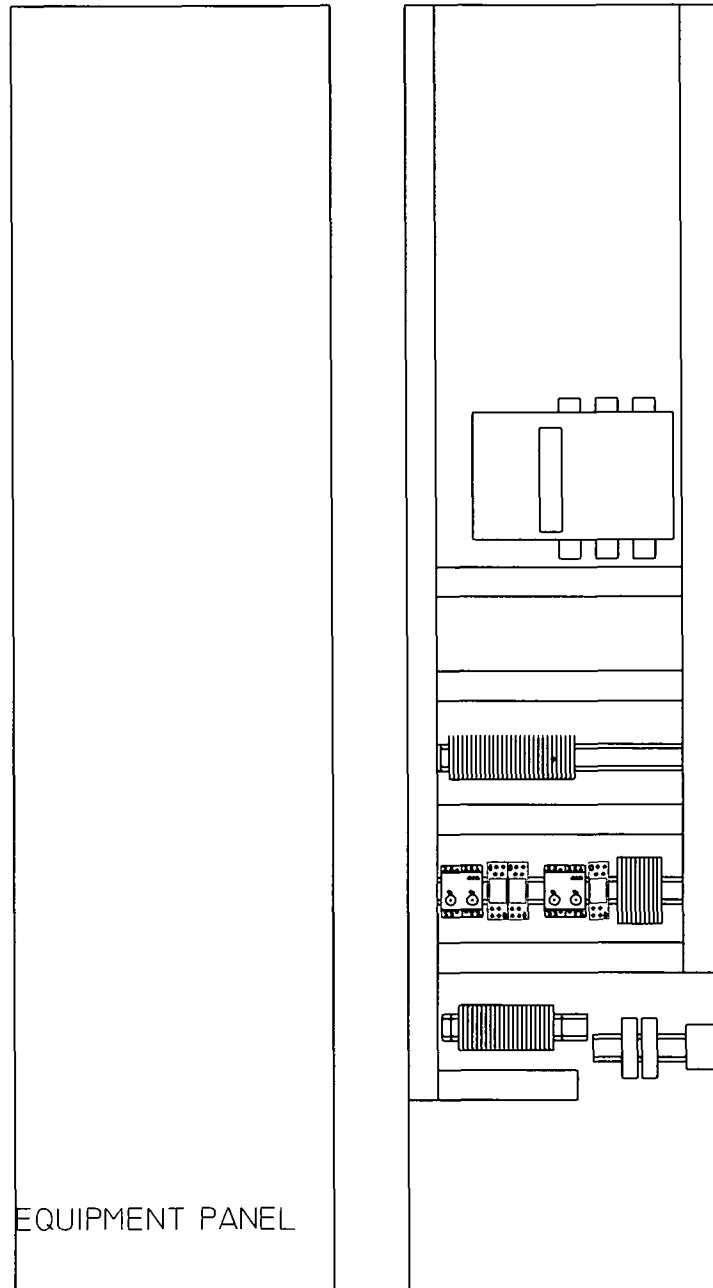
COMMON
LOGIC PTY. LTD.
PO. BOX 2008
Monsfield QLD. 4122
Tele: 07 3849 7449

DATE 10/04/06
DRAWN GCK
SCALE NTS
APPROVED

BRISBANE WATER STANDARD DRAWING
TYPICAL INDOOR 200 AMP SOLENOID OPERATED ATS
JH86DA09 A3 sheet 1/3 ISSUE C

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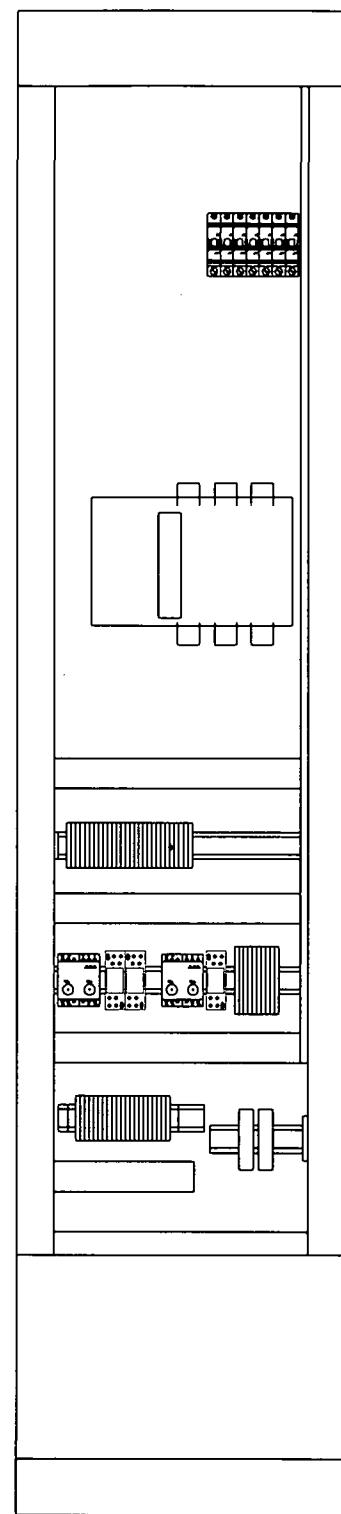
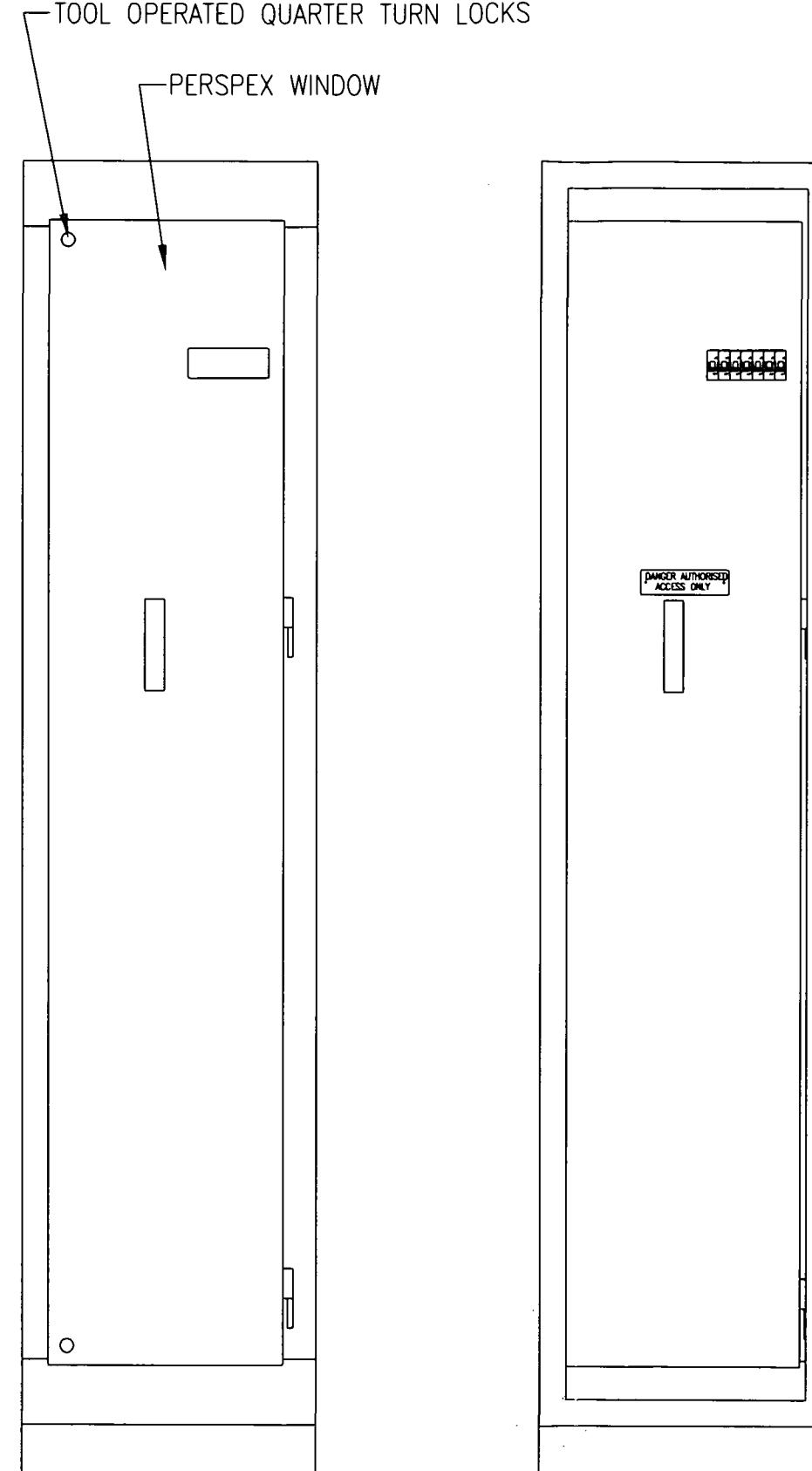
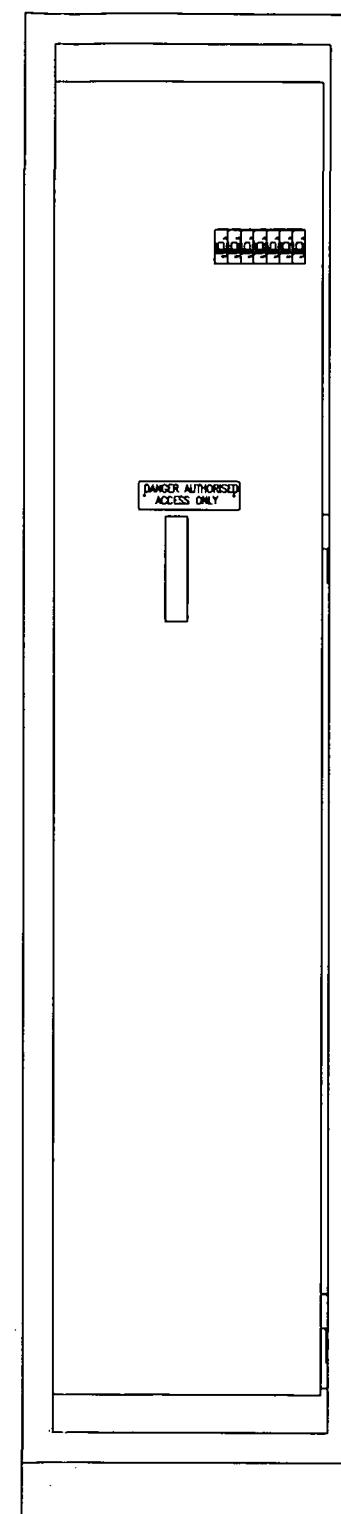
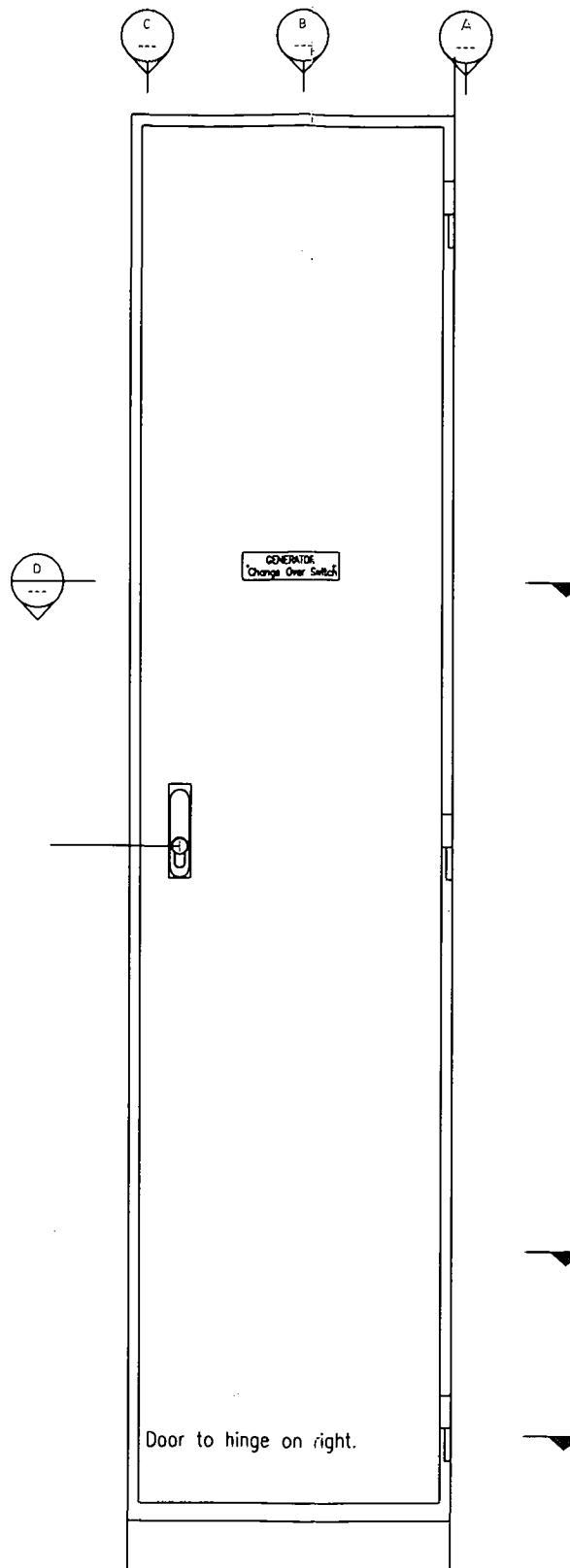
			FNN	LWN
1/9/06	C	AS INSTALLED	SWN	FTN
26/04/06	B	ISSUED FOR CONSTRUCTION	LTN	STN
11/04/06	A	ISSUED FOR APPROVAL		

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BRISBANE WATER STANDARD DRAWING
TYPICAL INDOOR 200 AMP SOLENOID OPERATED ATS
JH86DA10 A3 sheet 2/3 ISSUE C

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SECTION I
(COVER AND ESC REMOVED)SECTION I
(MULLION REMOVED)SECTION I
(DOOR REMOVED)

SECTION H

			PWN	LWN
1/9/06	C	AS INSTALLED	SWN	PTN
26/04/06	B	ISSUED FOR CONSTRUCTION	LTN	
11/04/06	A	ISSUED FOR APPROVAL	STN	

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DATE 10/04/06
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SCALE NTS
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BRISBANE WATER STANDARD DRAWING
TYPICAL INDOOR 200 AMP SOLENOID OPERATED ATS
JH86DA11 A3 sheet 3/3 ISSUE C



SEWAGE SYSTEM IMPROVEMENT 2005

SOLENOID TRANSFER SWITCH INSTALLATION

SP105 - RAUBERS ROAD, NORTHGATE

ELECTRICAL DRAWING INDEX

ELECTRICAL DRAWINGS INDEX			
DWG N°	TITLE	ISSUE	REVISIONS
	SOLENOID OPERATED - AUTOMATIC TRANSFER SWITCH - SITE SPECIFIC INSTALLATION		
486/5/7-QT200	RUABERS ROAD, NORTHGATE - GENSET A.T.S. INSTALLATION - ELECTRICAL DRAWING INDEX	06.2006	A B C
486/5/7-QT201	EQUIPMENT LEGEND	03.2006	A B
486/5/7-QT202	SUBMERSIBLE PUMPS Nos. 1, 2 & INCOMER POWER SCHEMATIC WIRING DIAGRAM	03.2006	A B
486/5/7-QT203	VACUUM PUMPS Nos. 1 & 2 POWER SCHEMATIC WIRING DIAGRAM	O	
486/5/7-QT204	SEWERAGE PUMPS Nos. 1 & 2 POWER SCHEMATIC WIRING DIAGRAM	O	
486/5/7-QT205	MISCELLANEOUS LIGHT & POWER SCHEMATIC WIRING DIAGRAM	03.2006	A B
486/5/7-QT206	SUBMERSIBLE PUMPS Nos. 1 & 2 CONTROL SCHEMATIC WIRING DIAGRAM	O	
486/5/7-QT207	VACUUM PUMPS Nos. 1 & 2 CONTROL SCHEMATIC WIRING DIAGRAM	O	
486/5/7-QT208	SEWERAGE PUMPS Nos. 1 & 2 CONTROL SCHEMATIC WIRING DIAGRAM	O	
486/5/7-QT209	COMMON CONTROL, WELL LEVEL, DELIVERY PRESSURE & SURCHARGE IMMINENT ALARM SCHEMATIC	06.2006	A B C
486/5/7-QT210	VACUUM PUMP STATION COMMON CONTROLS SCHEMATIC WIRING DIAGRAM	O	
486/5/7-QT211	RTU SCHEMATIC WIRING DIAGRAM - 1/2	06.2006	A B C
486/5/7-QT212	RTU SCHEMATIC WIRING DIAGRAM - 2/2	O	
486/5/7-QT213	RTU TERMINATION DIAGRAM - 1/2	06.2006	A B C
486/5/7-QT214	RTU TERMINATION DIAGRAM - 2/2	06.2006	A B C
486/5/7-QT215	CABLE SCHEDULE	03.2006	A B
486/5/7-QT216	SWITCHBOARD GENERAL ARRANGEMENT	03.2006	A B
486/5/7-QT219	SWITCHBOARD CONSTRUCTION NOTES	03.2006	A B
486/5/7-QT220	SWITCHBOARD SECTIONAL DETAILS	O	
486/5/7-QT221	SWITCHBOARD SPECIFIC DETAILS	O	
486/5/7-QT222	SUBMERSIBLE PUMPS PLUG ENCLOSURE - PLINTH AND MOUNTING PLATE DETAILS	O	
486/5/7-QT223	SWITCHBOARD LABEL LIST	O	
486/5/7-QT224	SITE LAYOUT	03.2006	A B
486/5/7-PS000	DRAWING INDEX - ELECTRICAL INSTALLATION-	05.2006	0 1 2
486/5/7-PS001	TYPICAL SOLENOID OPERATED - AUTOMATIC TRANSFER SWITCH - WIRING SCHEMATIC DIAGRAM	05.2006	0 1 2
486/5/7-PS002	TYPICAL SOLENOID OPERATED - AUTOMATIC TRANSFER SWITCH - CUBICLE ARRANGEMENT	05.2006	0 1 2
486/5/7-PS005	TYPICAL SOLENOID OPERATED - AUTOMATIC TRANSFER SWITCH - INTERCONNECTION DIAGRAM	05.2006	0 1
486/5/7-PS007	AUTOMATIC TRANSFER SWITCH - ATS EXTENSION CUBICLE - TYPICAL CONCRETE BASE ARRANGEMENT	05.2006	0 1

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TRANSFER SWITCH INSTALLATION

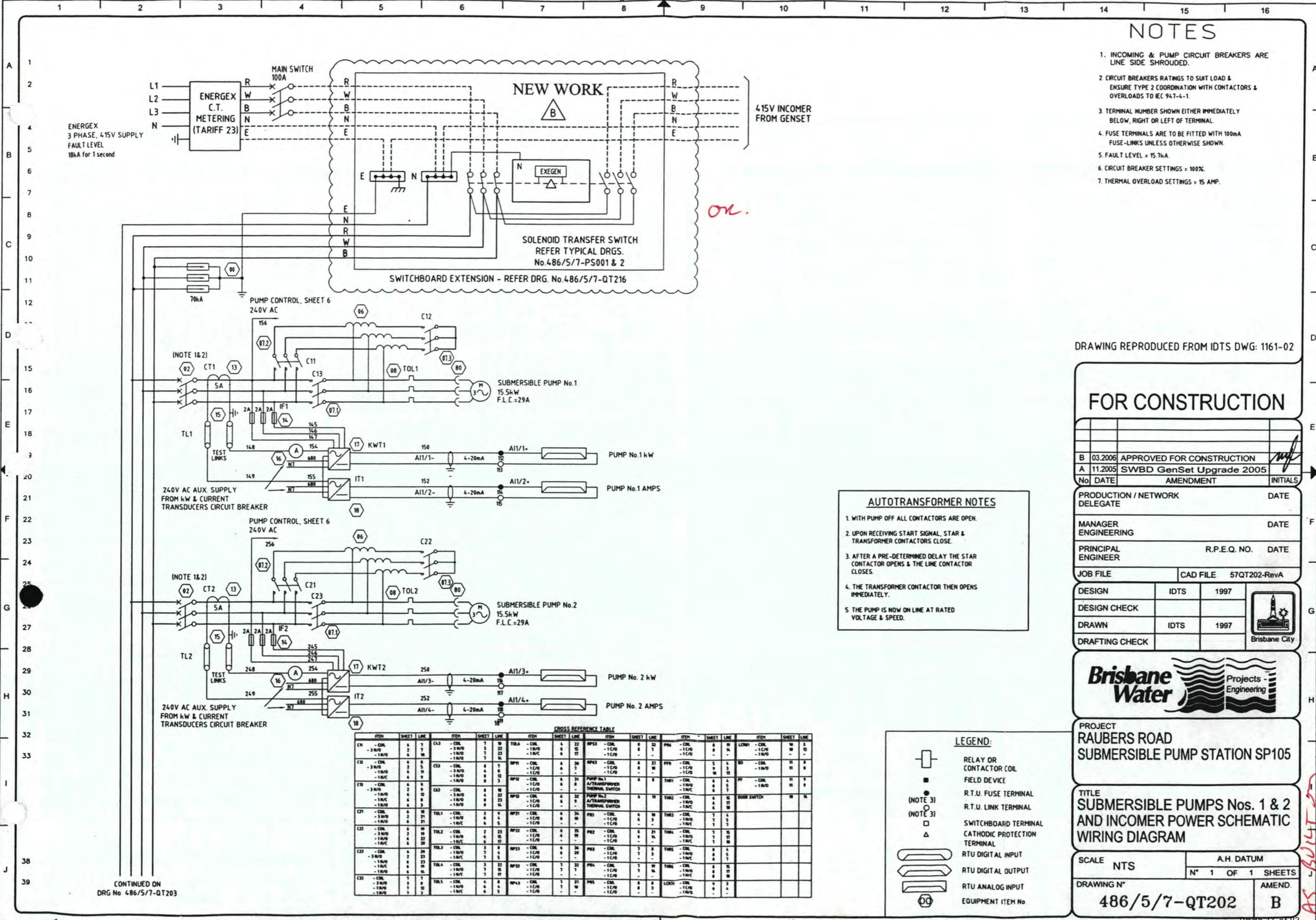


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C	06.06	NEW BORDER, RE-DRAWN & RE-ISSUED FOR CONSTRN	DRAFTED	I.O.T.S.	1997	I.O.T.S.	1997	PROJECT	TITLE			SHEET No. 18	
B	03.06	APPROVED FOR CONSTRUCTION	DRAFTING CHECK	DESIGN	R.P.E.O. No.	DATE	PRINCIPAL DESIGN MANAGER	DATE	SOLENOID TRANSFER SWITCH			BRISBANE WATER DRAWING No.	
A	11.05	SWBD GENSET UPGRADE 2005 - TENDER ISSUE	CAD FILE	57QT200_C					ELECTRICAL INSTALLATION			AMEND.	
No	DATE	AMENDMENT	DRN.	APD.	Reference Drawings	B.C.C. FILE No.	DESIGN CHECK	R.P.E.O. No.	DATE	CLIENT DELEGATE	DATE	486/5/7-QT200	C

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
---	---	---	---	---	---	---	---	---	----	----	----	----	----	----	----



ITEM No	QTY	DESCRIPTION	SUPPLIER	MANUFACTURER	CATALOGUE No	SENT TO KEPATRIK GREEN DATE	SENT TO POWER ELECTRIC DATE	CORRECTLY INSTALLED INT.	ITEM No	QTY	DESCRIPTION	SUPPLIER	MANUFACTURER	CATALOGUE No	SENT TO KEPATRIK GREEN DATE	SENT TO POWER ELECTRIC DATE	CORRECTLY INSTALLED INT.
00	3	SURGE DIVERTER	POWER ELECTRIC	CRITEC	SATWKA				55	1	STATION CONTROL SELECTOR SW.	POWER ELECTRIC	KRAUS & NAIMER	CAD11-A200-MF056/001			
01	1	MAIN C/B + SHROUD + HANDLE	POWER ELECTRIC	TERASAKI	XH125CL/100-UZPD-XFHAZ2				56	1	SITE ATTENTION RESET	POWER ELECTRIC	SPRECHER & SCHUH	DSP-F63LX10			
02	4	SUBMERSIBLE SEWERAGE PUMP C/B + SHROUD + INTERLOCK HANDLE	POWER ELECTRIC	TERASAKI	XH125KL/20-UZPD-XFHAZ2				57	4	PUMP INSTRUMENT C.T.'S	POWER ELECTRIC	CRIMPTON INSTRUMENTS	781-143T 60/5 (% TURNS)			
03	2	VACUUM PUMP CIRCUIT BREAKER + SHROUD + INTERLOCK HANDLE	POWER ELECTRIC	TERASAKI	XH125KL/20-UZPD-XFHAZ2				58	4	PUMP AMMETER	POWER ELECTRIC	CRIMPTON INSTRUMENTS	243-020G 8-15/90A			
04	1	SUB-DISTRIBUTION BOARD CFS	POWER ELECTRIC	LK ROLLCON	GLS-43-P1				59	1	SITE ATTENTION ALARM	POWER ELECTRIC	SPRECHER & SCHUH	DSP-P530L0			
04.1									60	1	PUMP WELL ATTENTION ALARM	KEPATRIK GREEN	KOBISH	SL-5-WHITE 24VDC			
04.2	3	FUSE CARTRIDGE	POWER ELECTRIC	GEC	TIA 32				61	1	3 PHASE OUTLET	SEALEC					
05	1	SUB-DISTRIBUTION BOARD CHASSIS	POWER ELECTRIC	TERASAKI	24P INSULATED BUS COMB				62	1	1 PHASE OUTLET	SEALEC					
06	2	AUTO-TRANSFORMER	POWER ELECTRIC	GEC GAYRAD	3AT75				63	1	NEUTRAL LINK	POWER ELECTRIC	CLIPSAL	BPM5014			
06.1	6	MICROTHERMS	POWER ELECTRIC	GEC GAYRAD	INCLUDED IN TRANSFORMERS				64	1	EARTH LINK	POWER ELECTRIC	CLIPSAL	BPM5014			
07		AUTO-TRANSFORMER CONTACTORS							65		SWITCHBOARD TERMINALS	POWER ELECTRIC	KLIPPON				
07.1	2	LINE CONTACTOR + AUX.	POWER ELECTRIC	SPRECHER & SCHUH	CA3-3TN-II + CA3-P-S18				65.1	35	ANALOGUE DISCONNECT	POWER ELECTRIC	KLIPPON	DKT4/35 (068744)			
07.2	2	TRANSFORMER CONTACTOR	POWER ELECTRIC	SPRECHER & SCHUH	CA3-3TN-II				65.2	35	END PLATE	POWER ELECTRIC	KLIPPON	AP 0867548			
07.3	2	STAR CONTACTOR + AUX.	POWER ELECTRIC	SPRECHER & SCHUH	CA3-12-10 + CA3-P-01				65.3	50	FUSE TERMINAL	POWER ELECTRIC	KLIPPON	ASKV/35 (047456)			
07.4	4	LINE CONTACTOR + AUX.	POWER ELECTRIC	SPRECHER & SCHUH	CA3-3TN-II + CA3-P-S18				65.4	50	END PLATE	POWER ELECTRIC	KLIPPON	AP 0387341			
08	2	SUBMERSIBLE PUMP OVERLOAD	POWER ELECTRIC	SPRECHER & SCHUH	CTA3-17				65.5	50	FUSE CARTRIDGE	POWER ELECTRIC	KLIPPON	FUSE 20x5mm			
09	2	VACUUM PUMP OVERLOAD	POWER ELECTRIC	SPRECHER & SCHUH	CTA3-12 (ILS-125A)				65.6	264	DISCONNECT TERMINAL	POWER ELECTRIC	KLIPPON	SAKU/35 (017216)			
10	2	SEWERAGE PUMP OVERLOAD	POWER ELECTRIC	SPRECHER & SCHUH	CTA3-12 (ILS-125A)				65.7	10	END PLATE	POWER ELECTRIC	KLIPPON	AP 021034			
11	6	BUS PLUG + SHROUD	POWER ELECTRIC	KENTAK	UP364W + UPE				65.8	17	END STOP	POWER ELECTRIC	KLIPPON	EW35 (038756)			
12	1	BUS PLUG + SHROUD	POWER ELECTRIC	KENTAK	UP325W + UPE				65.9	21	FEED THROUGH TERMINALS	POWER ELECTRIC	KLIPPON	SAKU/35 (044368)			
13	2	PUMP INSTRUMENT CT	POWER ELECTRIC	CRIMPTON INSTRUMENTS	781-143T 50/5 2 PRIMARY TURNS				65.10	1	END PLATE	POWER ELECTRIC	KLIPPON	AP 021034			
14	18	INSTRUMENT FUSES	POWER ELECTRIC	GEC	RS2WH				66	1	MAIN NEUTRAL LINK	POWER ELECTRIC					
14.1	18	FUSE CARTRIDGES	POWER ELECTRIC	GEC	HT2				67	1	MAIN EARTH LINK	POWER ELECTRIC					
15	12	CT TEST LINKS	POWER ELECTRIC	KLIPPON	SAKT2/35 (W592)				68	1	INSTRUMENTATION EARTH LINK	POWER ELECTRIC	CLIPSAL	BPM524			
15.1	6	END PLATE	POWER ELECTRIC	KLIPPON	AP 0329101				69								
15.2	6	SLIDE LINK 2 WAY	POWER ELECTRIC	KLIPPON	QVS2 (030730)				70	1	SOLENOID OPERATED TRANSFER SW N/P	TERASAKI	67W0FD24VAC (100A)	NEW WORK			
15.3	12	SLEEVE	POWER ELECTRIC	KLIPPON	VH19 (030804)				71								
15.4	12	SCREW	POWER ELECTRIC	KLIPPON	BS 0934/701				72								
16	2	PUMP AMMETER	POWER ELECTRIC	CRIMPTON INSTRUMENTS	243-020G 8-25/50A				73	1	24VDC 3A LINEAR POWER SUPPLY	POWER ELECTRIC	POWER BOX	E 24/03 GP			
17	6	KILOWATT TRANSDUCER	HUNTER WATERTECH	MULTITEK	MW00-WA2				74	1	24VDC CIRCUIT BREAKER	POWER ELECTRIC	TERASAKI	DMT6-106			
18	6	CURRENT TRANSDUCER	HUNTER WATERTECH	MULTITEK	MW00-AL1				75	1	RTU SURGE REDUCTION FILTER	HUNTER WATERTECH	CRITEC	SRP100K-SF			
19	1	PHASE FAILURE RELAY	POWER ELECTRIC	CRIMPTON INSTRUMENTS	Z52-PSGM				76	1	CATHODIC PROTECTION UNIT	FREE ISSUE					
20	1	PHASE FAILURE CIRCUIT BREAKER	POWER ELECTRIC	TERASAKI	DINT6-306				77	1	BATTERY ENCLOSURE	POWER ELECTRIC	NETWORK	DWG 101-23 DETAIL J			
21	1	3 PHASE OUTLET CIRCUIT BREAKER	POWER ELECTRIC	TERASAKI	DINT6-329				78	1	BATTERY VENT	POWER ELECTRIC	FIBOX	HBW564			
22	1	1 PHASE OUTLET CIRCUIT BREAKER	POWER ELECTRIC	TERASAKI	DINT6-106				79	1	RTU LAPTOP G.P.O.	POWER ELECTRIC	CLIPSAL	15 / 441 / 445A			
23	1	VACUUM STATION GPO's C/B	POWER ELECTRIC	TERASAKI	DINT6-106				80	2	DECONTACTOR	POWER ELECTRIC	MARECHAL	31-34013-072			
24	1	RTU LAP-TOP GPO C/B	POWER ELECTRIC	TERASAKI	DINT6-102				81	2	ANGLE ADAPTOR	POWER ELECTRIC	MARECHAL	31-34008-072			
25	1	SPARE CIRCUIT BREAKER	POWER ELECTRIC	TERASAKI	DINT6-106				82	2	PLUG TOP	POWER ELECTRIC	MARECHAL	31-34013-072			
26	1	CATHODIC PROTECTION CIRCUIT BREAKER	POWER ELECTRIC	TERASAKI	DINT6-106				83	1	RTU POWER FAIL RELAY	POWER ELECTRIC	I2UMI	RH2B-U-24VAC			
27	1	24VDC POWER SUPPLY CIRCUIT BREAKER	POWER ELECTRIC	TERASAKI	DINT6-106				84	1	RTU BATTERY DISCHARGE RELAY	POWER ELECTRIC	I2UMI	RH2B-U-12VDC			
28	1	TRANSDUCERS CIRCUIT BREAKER	POWER ELECTRIC	TERASAKI	DINT6-106				85	1	RTU POWER SUPPLY 12VDC	HUNTER WATERTECH	POWERBOX	PS6-15			
29	1	RTU CIRCUIT BREAKER	POWER ELECTRIC	TERASAKI	DINT6-106				86	1	RTU 12V/24VDC CONVERTER	HUNTER WATERTECH	POWERBOX	VTA254SC12			
30	1	VACUUM STATION LIGHTING C/B	POWER ELECTRIC	TERASAKI	DINT6-106				87								
31	4	SPARE CIRCUIT BREAKERS	POWER ELECTRIC	TERASAKI	DINT6-106				88	1	RADIO	HUNTER WATERTECH	TRIO	TR-1000R/L			
32	1	VACUUM STATION VENT FAN C/B	POWER ELECTRIC	TERASAKI	DINT6-106				89	8	EXPANSION BASE	HUNTER WATERTECH	SYMAX	WBW564			
33	1	1 PHASE OUTLET RC0 C/B	POWER ELECTRIC	TERASAKI	DSRCBH1934A		NEW WORK		90	2	TELEMETRY UNIT	HUNTER WATERTECH	HUNTER WATERTECH	PO5504			
34	1	WELL LEVEL INDICATOR	POWER ELECTRIC	CRIMPTON INSTRUMENTS	244-0KG 4-20mA 0-100% + RED POINTER				91	5	DIGITAL INPUT MODULE	HUNTER WATERTECH	SYMAX	WBW50116			
35	1	PRESSURE TRANSMITTER RELAY	HUNTER WATERTECH	PLATYPUS	AP-WT221				92	1	DUPPLY MODULE	HUNTER WATERTECH	SYMAX	WBW50411			
35.1	1	PRESSURE TRANSDUCER	HUNTER WATERTECH	PLATYPUS	PL-5505W				93	4	DIGITAL OUTPUT MODULE	HUNTER WATERTECH	SYMAX	WBW5HT100			
36	1	WELL LEVEL TRANSDUCER	HUNTER WATERTECH	VEGA	E25-B				94	4	ANALOGUE INPUT MODULE	HUNTER WATERTECH	HUNTER WATERTECH	PO5504			
36.1	1	WELL LEVEL PRESSURE SENSOR	HUNTER WATERTECH	VEGA	D77				95								
36.2	1	RAG REDUCTION TUBE	HUNTER WATERTECH	HUNTER WATERTECH					96								
37	6	PUMP CONTROL CIRCUIT BREAKER	POWER ELECTRIC	TERASAKI	DINT6-106				97	1	ANTENNA	HUNTER WATERTECH	RF. INDUSTRIES	YB006-02</td			



DRAWING REPRODUCED FROM IDTS DWG: 1161-02

FOR CONSTRUCTION

B	03.2006	APPROVED FOR CONSTRUCTION
A	11.2005	SWBD GenSet Upgrade 2005
No	DATE	AMENDMENT
INITIALS		

PRODUCTION / NETWORK
DELEGATEMANAGER
ENGINEERINGPRINCIPAL
ENGINEER

JOB FILE CAD FILE 57QT202-RevA

DESIGN IDTS 1997

DESIGN CHECK

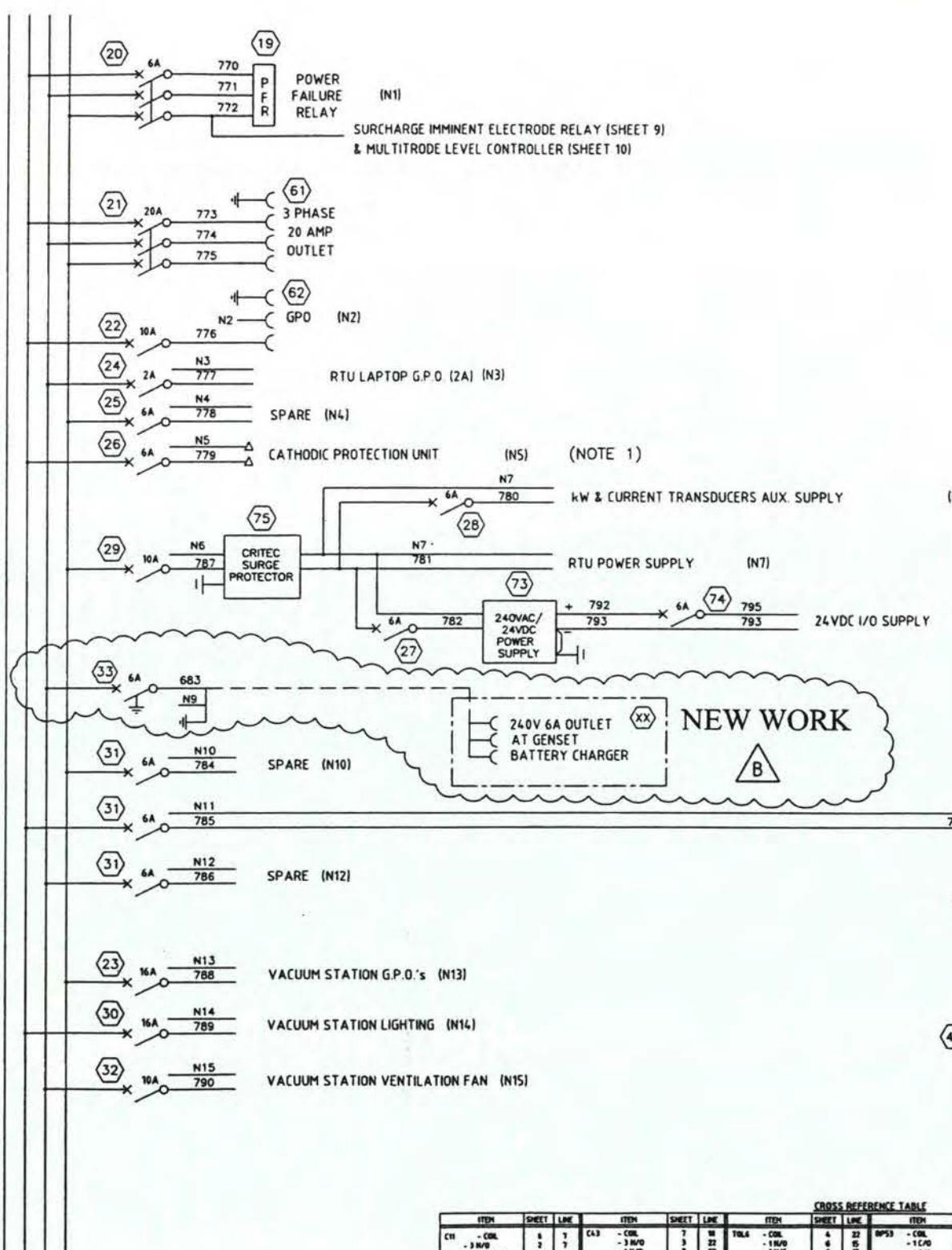
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DRAFTING CHECK

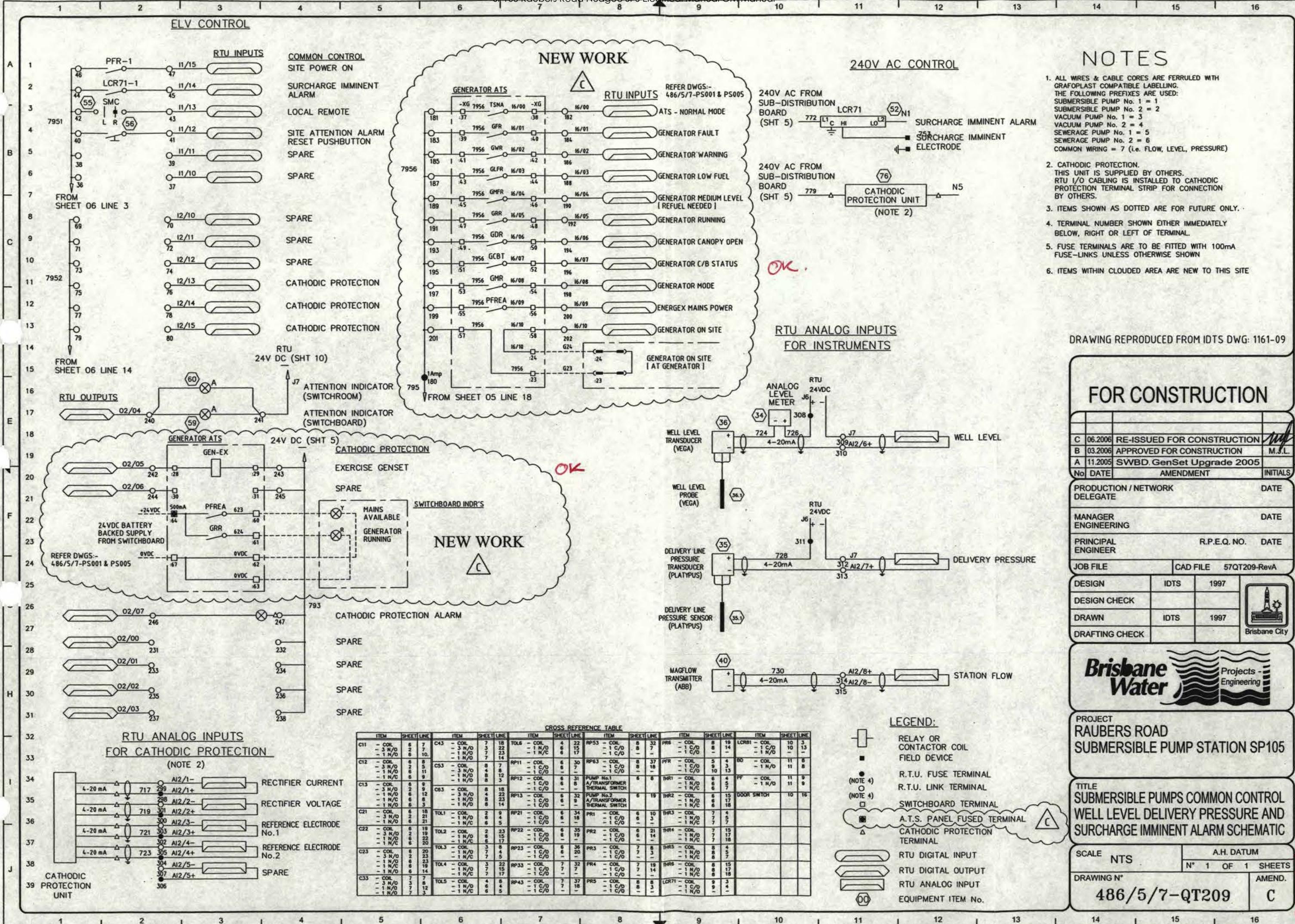
PROJECT
RAUBERS ROAD
SUBMERSIBLE PUMP STATION SP105TITLE
SUBMERSIBLE PUMPS Nos. 1 & 2
AND INCOMER POWER SCHEMATIC
WIRING DIAGRAMSCALE NTS A.H. DATUM
N° 1 OF 1 SHEETS
DRAWING N° 486/5/7-QT202 AMEND.

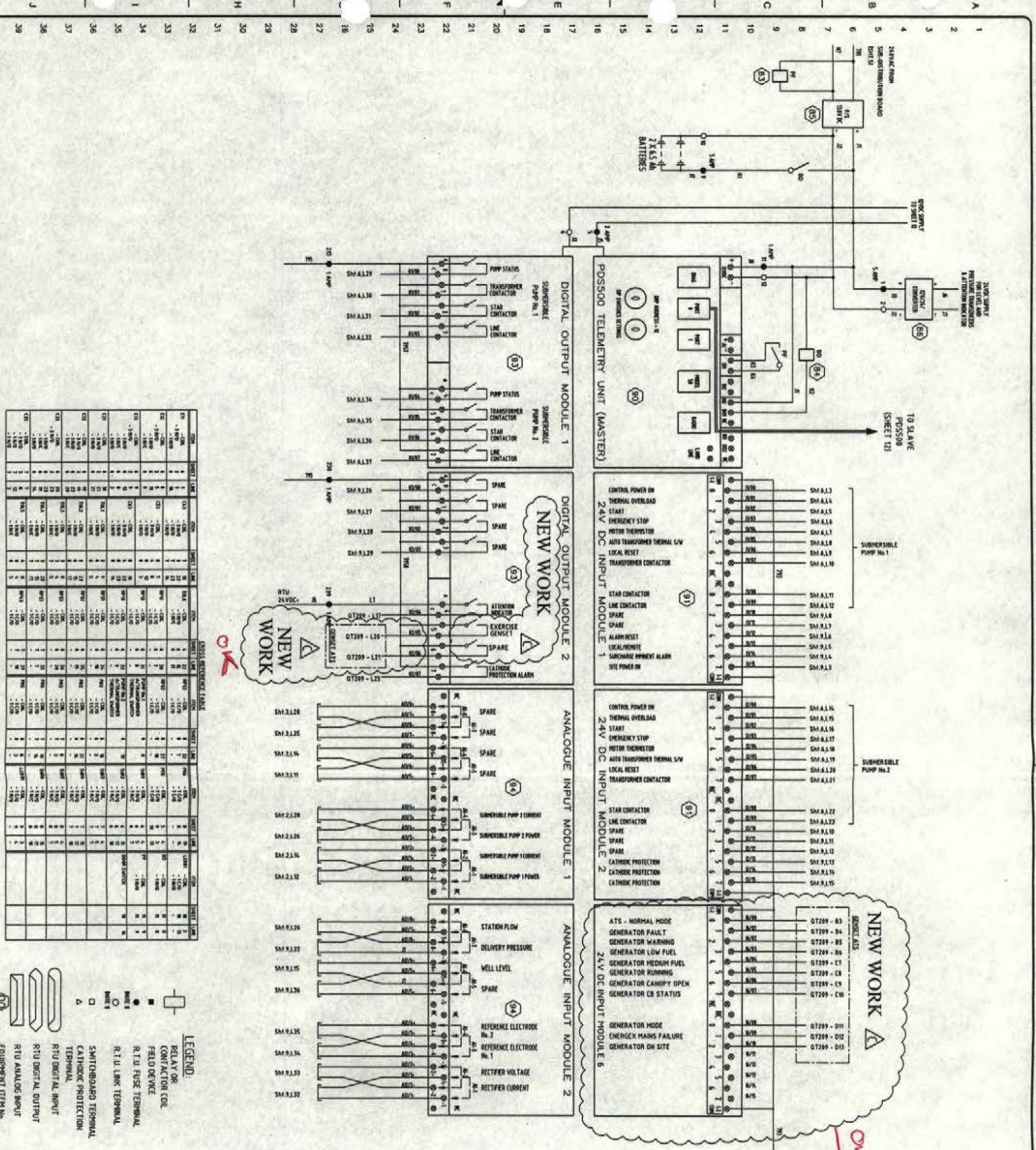
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1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16

A 1
CONTINUED FROM
SHEET 04

CROSS REFERENCE TABLE											
ITEM	sheet	line	ITEM	sheet	line	ITEM	sheet	line	ITEM	sheet	line
C11 - COL - 3 M/P - 1 M/P	2	7	TOL1 - COL - 3 M/P - 1 M/P	22	10P53 - COL - 1 C/O - 1 C/O	8	PRI - COL - 1 C/O - 1 C/O	8	LCPH - COL - 1 C/O - 1 M/P	8	13 -
C12 - COL - 3 M/P - 1 M/P - 1 M/P	6	8	TOL2 - COL - 3 M/P - 1 M/P	22	10P54 - COL - 1 C/O - 1 C/O	8	PRI - COL - 1 C/O - 1 C/O	8	BD - COL - 1 M/P	11	8
C13 - COL - 3 M/P - 1 M/P - 1 M/P	6	9	TOL3 - COL - 3 M/P - 1 M/P	22	10P55 - COL - 1 C/O - 1 C/O	8	PRI - COL - 1 C/O - 1 C/O	8	BD - COL - 1 M/P	11	9
C14 - COL - 3 M/P - 1 M/P - 1 M/P	6	10	TOL4 - COL - 3 M/P - 1 M/P	22	10P56 - COL - 1 C/O - 1 C/O	8	PRI - COL - 1 C/O - 1 C/O	8	BD - COL - 1 M/P	11	10
C15 - COL - 3 M/P - 1 M/P - 1 M/P	6	11	TOL5 - COL - 3 M/P - 1 M/P	22	10P57 - COL - 1 C/O - 1 C/O	8	PRI - COL - 1 C/O - 1 C/O	8	BD - COL - 1 M/P	11	11
C16 - COL - 3 M/P - 1 M/P - 1 M/P	6	12	TOL6 - COL - 3 M/P - 1 M/P	22	10P58 - COL - 1 C/O - 1 C/O	8	PRI - COL - 1 C/O - 1 C/O	8	BD - COL - 1 M/P	11	12
C17 - COL - 3 M/P - 1 M/P - 1 M/P	6	13	TOL7 - COL - 3 M/P - 1 M/P	22	10P59 - COL - 1 C/O - 1 C/O	8	PRI - COL - 1 C/O - 1 C/O	8	BD - COL - 1 M/P	11	13
C18 - COL - 3 M/P - 1 M/P - 1 M/P	6	14	TOL8 - COL - 3 M/P - 1 M/P	22	10P60 - COL - 1 C/O - 1 C/O	8	PRI - COL - 1 C/O - 1 C/O	8	BD - COL - 1 M/P	11	14
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C20 - COL - 3 M/P - 1 M/P - 1 M/P	6	16	TOL10 - COL - 3 M/P - 1 M/P	22	10P62 - COL - 1 C/O - 1 C/O	8	PRI - COL - 1 C/O - 1 C/O	8	BD - COL - 1 M/P	11	16
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C23 - COL - 3 M/P - 1 M/P - 1 M/P	6	19	TOL13 - COL - 3 M/P - 1 M/P	22	10P65 - COL - 1 C/O - 1 C/O	8	PRI - COL - 1 C/O - 1 C/O	8	BD - COL - 1 M/P	11	19
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C25 - COL - 3 M/P - 1 M/P - 1 M/P	6	21	TOL15 - COL - 3 M/P - 1 M/P	22	10P67 - COL - 1 C/O - 1 C/O	8	PRI - COL - 1 C/O - 1 C/O	8	BD - COL - 1 M/P	11	21
C26 - COL - 3 M/P - 1 M/P - 1 M/P	6	22	TOL16 - COL - 3 M/P - 1 M/P	22	10P68 - COL - 1 C/O - 1 C/O	8	PRI - COL - 1 C/O - 1 C/O	8	BD - COL - 1 M/P	11	22
C27 - COL - 3 M/P - 1 M/P - 1 M/P	6	23	TOL17 - COL - 3 M/P - 1 M/P	22	10P69 - COL - 1 C/O - 1 C/O	8	PRI - COL - 1 C/O - 1 C/O	8	BD - COL - 1 M/P	11	23
C28 - COL - 3 M/P - 1 M/P - 1 M/P	6	24	TOL18 - COL - 3 M/P - 1 M/P	22	10P70 - COL - 1 C/O - 1 C/O	8	PRI - COL - 1 C/O - 1 C/O	8	BD - COL - 1 M/P	11	24
C29 - COL - 3 M/P - 1 M/P - 1 M/P	6	25	TOL19 - COL - 3 M/P - 1 M/P	22	10P71 - COL - 1 C/O - 1 C/O	8	PRI - COL - 1 C/O - 1 C/O	8	BD - COL - 1 M/P	11	25
C30 - COL - 3 M/P - 1 M/P - 1 M/P	6	26	TOL20 - COL - 3 M/P - 1 M/P	22	10P72 - COL - 1 C/O - 1 C/O	8	PRI - COL - 1 C/O - 1 C/O	8	BD - COL - 1 M/P	11	26
C31 - COL - 3 M/P - 1 M/P - 1 M/P	6	27	TOL21 - COL - 3 M/P - 1 M/P	22	10P73 - COL - 1 C/O - 1 C/O	8	PRI - COL - 1 C/O - 1 C/O	8	BD - COL - 1 M/P	11	27
C32 - COL - 3 M/P - 1 M/P - 1 M/P	6	28	TOL22 - COL - 3 M/P - 1 M/P	22	10P74 - COL - 1 C/O - 1 C/O	8	PRI - COL - 1 C/O - 1 C/O	8	BD - COL - 1 M/P	11	28
C33 - COL - 3 M/P - 1 M/P - 1 M/P	6	29	TOL23 - COL - 3 M/P - 1 M/P	22	10P75 - COL - 1 C/O - 1 C/O	8	PRI - COL - 1 C/O - 1 C/O	8	BD - COL - 1 M/P	11	29
C34 - COL - 3 M/P - 1 M/P - 1 M/P	6	30	TOL24 - COL - 3 M/P - 1 M/P	22	10P76 - COL - 1 C/O - 1 C/O	8	PRI - COL - 1 C/O - 1 C/O	8	BD - COL - 1 M/P	11	30
C35 - COL - 3 M/P - 1 M/P - 1 M/P	6	31	TOL25 - COL - 3 M/P - 1 M/P	22	10P77 - COL - 1 C/O - 1 C/O	8	PRI - COL - 1 C/O - 1 C/O	8	BD - COL - 1 M/P	11	31
C36 - COL - 3 M/P - 1 M/P - 1 M/P	6	32	TOL26 - COL - 3 M/P - 1 M/P	22	10P78 - COL - 1 C/O - 1 C/O	8	PRI - COL - 1 C/O - 1 C/O	8	BD - COL - 1 M/P	11	32
C37 - COL - 3 M/P - 1 M/P - 1 M/P	6	33	TOL27 - COL - 3 M/P - 1 M/P	22	10P79 - COL - 1 C/O - 1 C/O	8	PRI - COL - 1 C/O - 1 C/O	8	BD - COL - 1 M/P	11	33
C38 - COL - 3 M/P - 1 M/P - 1 M/P	6	34	TOL28 - COL - 3 M/P - 1 M/P	22	10P80 - COL - 1 C/O - 1 C/O	8	PRI - COL - 1 C/O - 1 C/O	8	BD - COL - 1 M/P	11	34
C39 - COL - 3 M/P - 1 M/P - 1 M/P	6	35	TOL29 - COL - 3 M/P - 1 M/P	22	10P81 - COL - 1 C/O - 1 C/O	8	PRI - COL - 1 C/O - 1 C/O	8	BD - COL - 1 M/P	11	35
C40 - COL - 3 M/P - 1 M/P - 1 M/P	6	36	TOL30 - COL - 3 M/P - 1 M/P	22	10P82 - COL - 1 C/O - 1 C/O	8	PRI - COL - 1 C/O - 1 C/O	8	BD - COL - 1 M/P	11	36
C41 - COL - 3 M/P - 1 M/P - 1 M/P	6	37	TOL31 - COL - 3 M/P - 1 M/P	22	10P83 - COL - 1 C/O - 1 C/O	8	PRI - COL - 1 C/O - 1 C/O	8	BD - COL - 1 M/P	11	37
C42 - COL - 3 M/P - 1 M/P - 1 M/P	6	38	TOL32 - COL - 3 M/P - 1 M/P	22	10P84 - COL - 1 C/O - 1 C/O	8	PRI - COL - 1 C/O - 1 C/O	8	BD - COL - 1 M/P	11	38
C43 - COL - 3 M/P - 1 M/P - 1 M/P	6	39	TOL33 - COL - 3 M/P - 1 M/P	22	10P85 - COL - 1 C/O - 1 C/O	8	PRI - COL - 1 C/O - 1 C/O	8	BD - COL - 1 M/P	11	39
C44 - COL - 3 M/P - 1 M/P - 1 M/P	6	40	TOL34 - COL - 3 M/P - 1 M/P	22	10P86 - COL - 1 C/O - 1 C/O	8	PRI - COL - 1 C/O - 1 C/O	8	BD - COL - 1 M/P	11	40
C45 - COL - 3 M/P - 1 M/P - 1 M/P	6	41	TOL35 - COL - 3 M/P - 1 M/P	22	10P87 - COL - 1 C/O - 1 C/O	8	PRI - COL - 1 C/O - 1 C/O	8	BD - COL - 1 M/P	11	41
C46 - COL - 3 M/P - 1 M/P - 1 M/P	6	42	TOL36 - COL - 3 M/P - 1 M/P	22	10P88 - COL - 1 C/O - 1 C/O	8	PRI - COL - 1 C/O - 1 C/O	8	BD - COL - 1 M/P	11	42
C47 - COL - 3 M/P - 1 M/P - 1 M/P	6	43	TOL37 - COL - 3 M/P - 1 M/P	22	10P89 - COL - 1 C/O - 1 C/O	8	PRI - COL - 1 C/O - 1 C/O	8	BD - COL - 1 M/P	11	43
C48 - COL - 3 M/P - 1 M/P - 1 M/P	6	44	TOL38 - COL - 3 M/P - 1 M/P	22	10P90 - COL - 1 C/O - 1 C/O	8	PRI - COL - 1 C/O - 1 C/O	8	BD - COL - 1 M/P	11	44
C49 - COL - 3 M/P - 1 M/P - 1 M/P	6	45	TOL39 - COL - 3 M/P - 1 M/P	22	10P91 - COL - 1 C/O - 1 C/O	8	PRI - COL - 1 C/O - 1 C/O	8	BD - COL - 1 M/P	11	45
C50 - COL - 3 M/P - 1 M/P - 1 M/P	6	46	TOL40 - COL - 3 M/P - 1 M/P	22	10P92 - COL - 1 C/O - 1 C/O	8	PRI - COL - 1 C/O - 1 C/O	8	BD - COL - 1 M/P	11	46
C51 - COL - 3 M/P - 1 M/P - 1 M/P	6	47	TOL41 - COL - 3 M/P - 1 M/P	22	10P93 - COL - 1 C/O - 1 C/O	8	PRI - COL - 1 C/O - 1 C/O	8	BD - COL - 1 M/P	11	47
C52 - COL - 3 M/P - 1 M/P - 1 M/P	6	48	TOL42 - COL - 3 M/P - 1 M/P	22	10P94 - COL - 1 C/O - 1 C/O	8	PRI - COL - 1 C/O - 1 C/O	8	BD - COL - 1 M/P	11	48
C53 - COL - 3 M/P - 1 M/P - 1 M/P	6	49	TOL43 - COL - 3 M/P - 1 M/P	22	10P95 - COL - 1 C/O - 1 C/O	8	PRI - COL - 1 C/O - 1 C/O	8	BD - COL - 1 M/P	11	49
C54 - COL - 3 M/P - 1 M/P - 1 M/P	6	50	TOL44 - COL - 3 M/P - 1 M/P	22	10P96 - COL - 1 C/O - 1 C/O	8	PRI - COL - 1 C/O - 1 C/O	8	BD - COL - 1 M/P	11	50

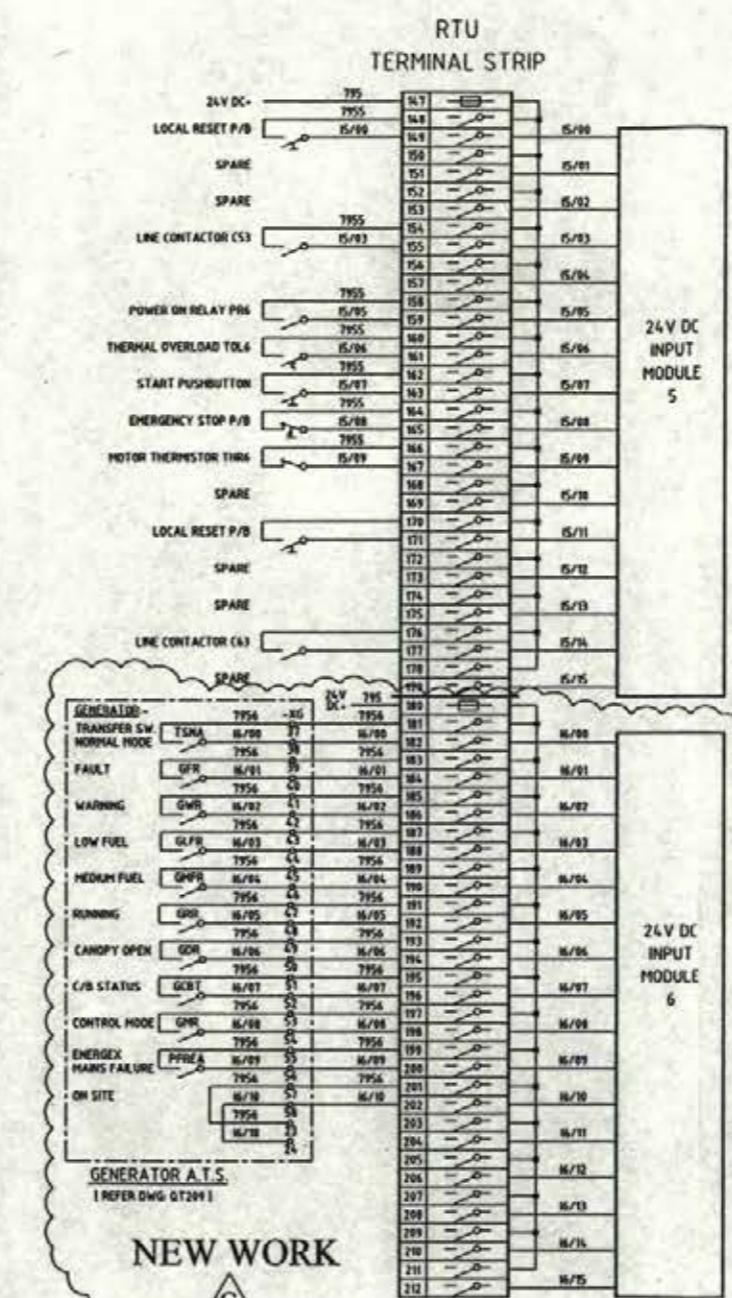
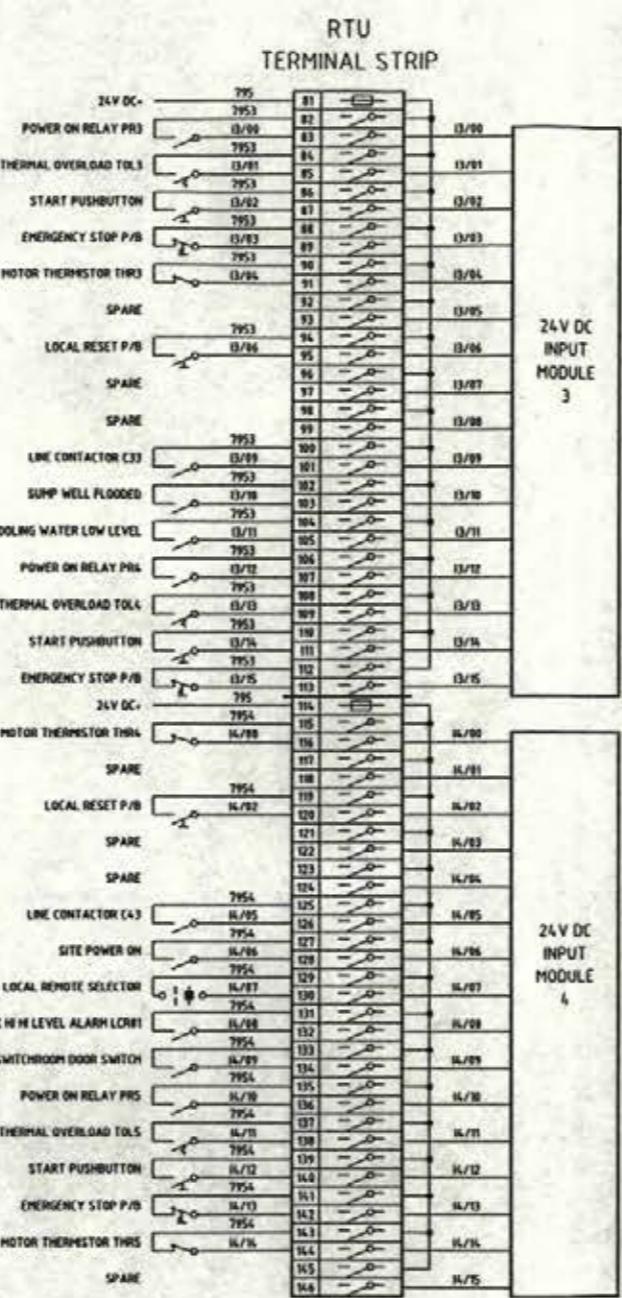
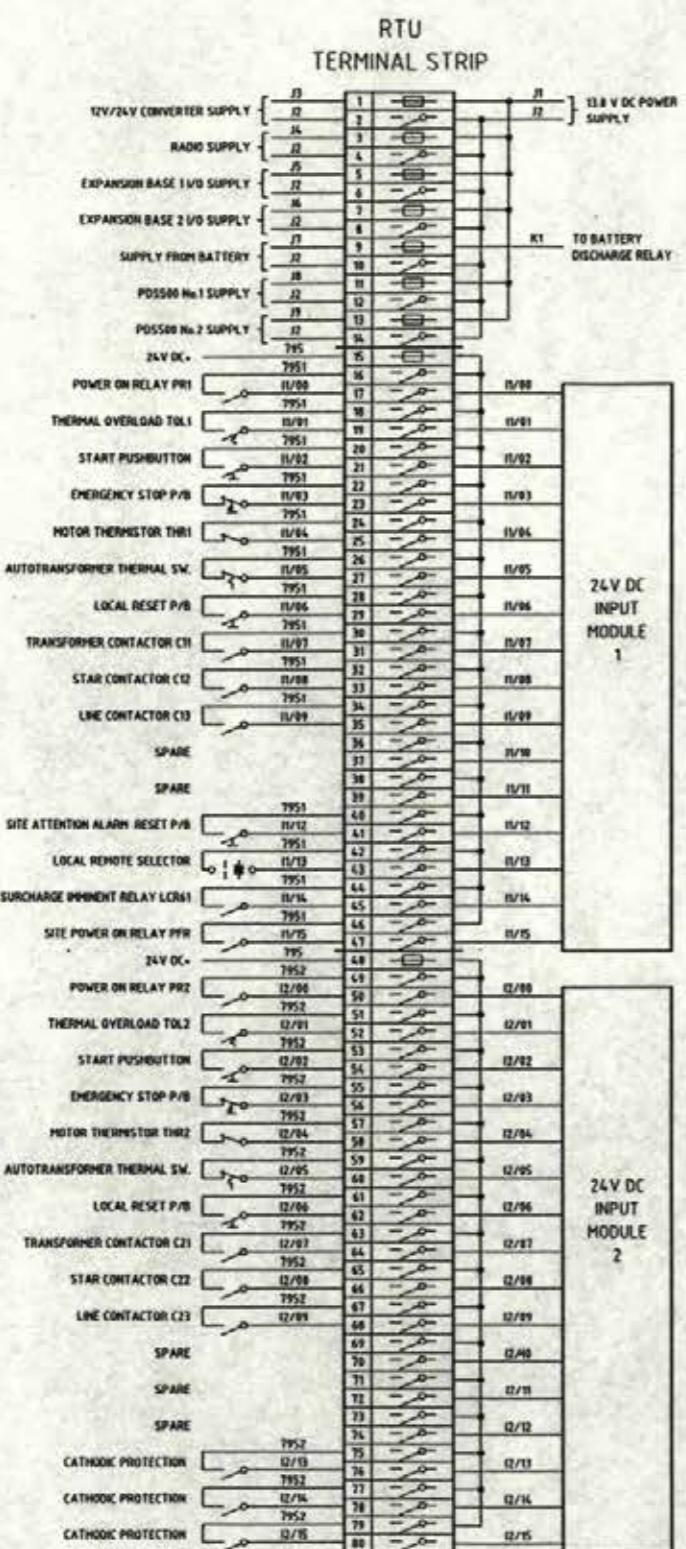




PROJECT RAUBERS ROAD SUBMERSIBLE PUMP STATION SP105		FOR CONSTRUCTION	
TITLE RTU SCHEMATIC WIRING DIAGRAM 1/2		MANAGER ENGINEERING	R.P.E.O. NO.
JOB FILE	CAD FILE 5701211-RevA		
PRINCIPAL ENGINEER	DATE	DRAWN	IDTS
PRODUCTION / NETWORK	DATE	DRAFTING CHECK	1997
DELEGATE	DATE	RTU FUSE TERMINAL	
FIELD DEVICE	DATE	R.T.U. LINK TERMINAL	
RTU DIGITAL INPUT	DATE	SWITCHBOARD TERMINAL	
RTU ANALOG INPUT	DATE	CATHODIC PROTECTION TERMINAL	
EQUIPMENT ITEM No.	DATE	AMEND.	

Brisbane Water
Projects Engineering

486/5/7-QT211

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NEW WORK C

OK.

FOR CONSTRUCTION

C	06.2006	RE-ISSUED FOR CONSTRUCTION	<i>M.J.L.</i>
B	03.2006	APPROVED FOR CONSTRUCTION	<i>M.J.L.</i>
A	11.2005	SWBD GenSet Upgrade 2005	

No DATE AMENDMENT INITIALS

PRODUCTION / NETWORK DATE DELEGATE

MANAGER ENGINEERING DATE

PRINCIPAL ENGINEER R.P.E.Q. NO. DATE

JOB FILE CAD FILE 57QT213-RevA

DESIGN IDTS 1997

DESIGN CHECK

DRAWN IDTS 1997

DRAFTING CHECK



Brisbane Water Projects - Engineering

PROJECT RAUBERS ROAD SUBMERSIBLE PUMP STATION SP105

TITLE RTU TERMINATION DIAGRAM

1/2

SCALE NTS A.H. DATUM

N° 1 OF 2 SHEETS

DRAWING N° 486/5/7-QT213 AMEND.

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OK

NEW WORK

GENSET A.T.S.

GEN-EX

XG

28

29

SPARE

31

623

8VDC

62

Y

MANS

AVAILABLE

624

8VDC

61

R

GENERATOR

RUNNING

[REFER DWG. QT209]

C

ATTENTION INDICATOR

(SWITCHBOARD)

J6

EXERCISE GENSET

24V DC+

ATTENTION INDICATOR

(SWITCHBOARD)

J7

24V DC-

24V DC+

GEN-EX

XG

28

29

SPARE

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(SWITCHBOARD)

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(SWITCHBOARD)

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24V DC-

24V DC+

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28

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SPARE

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623

8VDC

62

Y

MANS

AVAILABLE

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61

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GENERATOR

RUNNING

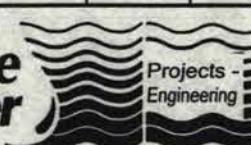
[REFER DWG. QT209]

C

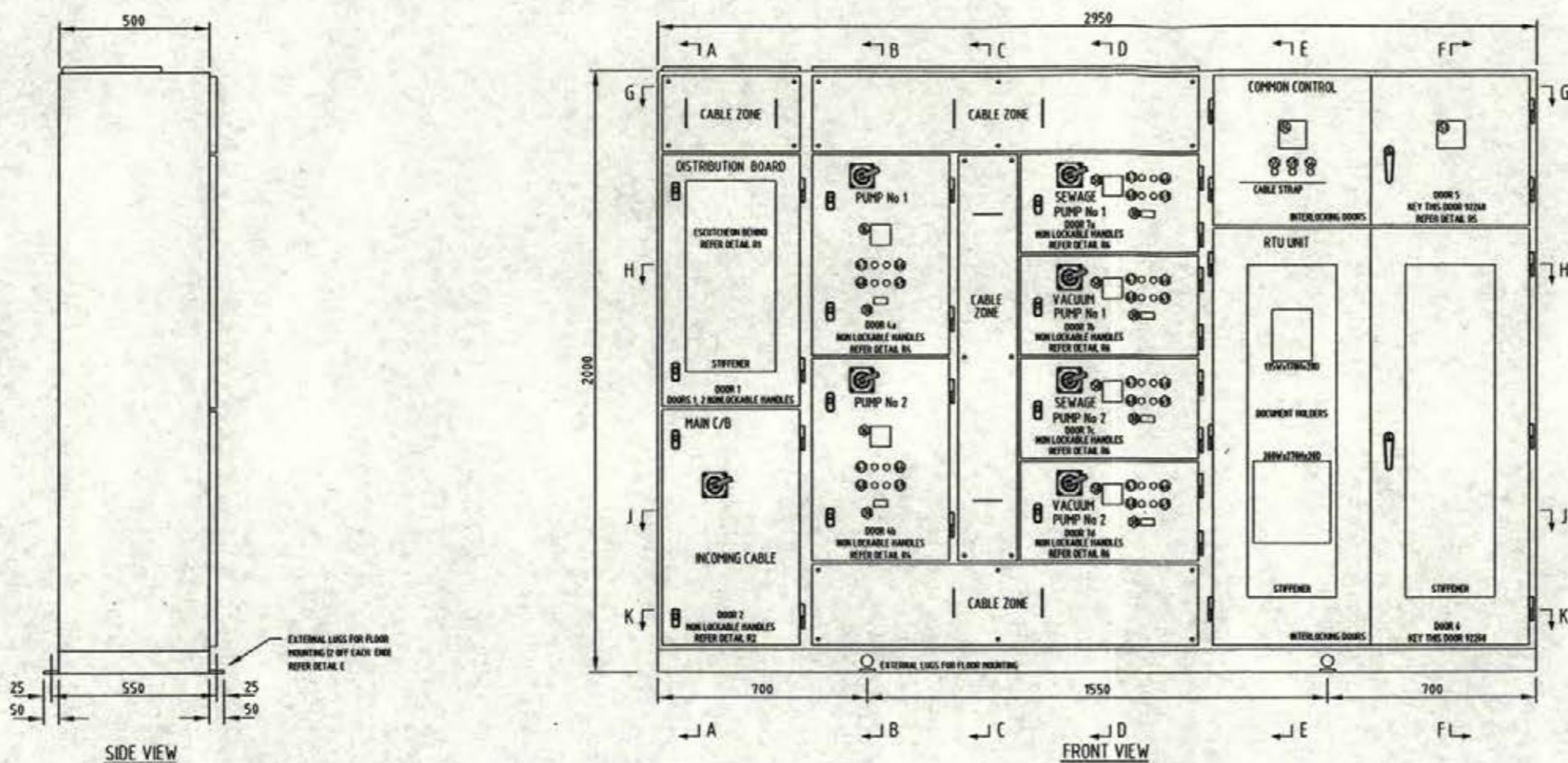
CABLE No.	SIZE mm ²	CORES	TYPE	LENGTH (m)	FROM - TO - VIA ROUTE	CABLE FUNCTION	CORRECTLY INSTALLED	
							INITIAL	DATE
P01	16	4	Circular	25	SEQEB Pole to new meter box.	Incoming Mains		
P02	10	1	Building wire	4	Earth stake to new switchboard.	Main earth		
P03	16	4 + E	Circular	5	Meter box to new switchboard.	Incoming Mains		
P04	2.5	3 + E	Circular	20	Switchboard to submersible pumps marshalling panel.	Submersible pump No.1 motor supply		
P05	1.5	2 + E	Circular	20	Switchboard to submersible pumps marshalling panel.	Submersible pump No.1 thermistors		
P06	2.5	3 + E	Circular	20	Switchboard to submersible pumps marshalling panel.	Submersible pump No.2 motor supply		
P07	1.5	2 + E	Circular	20	Switchboard to submersible pumps marshalling panel.	Submersible pump No.2 thermistors		
P08			Flexible	Existing	Submersible pumps marshalling panel to Pump No.1 motor.	Submersible pump No.1 motor supply		
P09			Flexible	Existing	Submersible pumps marshalling panel to Pump No.2 motor.	Submersible pump No.2 motor supply		
P10	2.5	3 + E			Switchboard to Vacuum Pump No.1 motor.	Vacuum Pump No.1 motor supply		
P11	2.5	3 + E			Switchboard to Vacuum Pump No.2 motor.	Vacuum Pump No.2 motor supply		
P12	2.5	3 + E			Switchboard to Sewerage Pump No.1 motor.	Sewerage Pump No.1 motor supply		
P13	2.5	3 + E			Switchboard to Sewerage Pump No.2 motor.	Sewerage Pump No.2 motor supply		
P14	2.5	3 + E	Circular		Switchboard to three phase 20A outlet.	415V outlet supply		
P15	2.5	2 + E	TPS		Switchboard to 240V G.P.O.'s.	240V outlets supply		
P16	1.5	2 + E	TPS		Switchboard to vacuum station lights.	Lighting supply		
P17	2.5	2 + E	TPS		Switchboard to vacuum station ventilation fan.	Ventilation fan 240V supply		
P18					Extend existing cathodic protection cables to new switchboard.	Cathodic Protection		
P-GEN	25	4	Circular	20	ATS PANEL TO GENSET SLAB	Incoming Genset Power - FREE ISSUE		
P-GEN AUX	2.5	2+E	Circular	20	ATS PANEL TO GENSET SLAB	Ancillary Power to Genset		
C-GEN	1.0	2+25+E	PVC/PVC	20	ATS PANEL TO GENSET SLAB	Genset Control/Indication		
X01			Coax	1.5	Switchboard radio to coax surge protector.	Radio communications		
X02			Coax	7	Switchboard coax surge protector to antenna.	Radio communications		
C01			Special	17	Reflux valve pressure probe to switchboard.	Delivery pressure signal		
C02			Special	26	Wet well level probe to switchboard.	Wet well level signal		
C03			Special	20	Wet well level probe to switchboard.	Surcharge imminent level signal		
C04			Special		Tank level probe to switchboard.	Tank Hi Hi level alarm signal		
C05			Special		Tank level probe to switchboard.	Tank level analogue signal		
C06			Special		Vacuum pressure probe to switchboard.	Collection tank vacuum pressure signal		
C07					Switchroom door operated switch to switchboard.	Switchroom door open signal.		
C08			Special		Flowmeter signal from Flow Sensor to Flow Transmitter	Flowmeter Signal from Sensor		
C09	.75	1PR	DEKORON	5	Flowmeter Signal from Transmitter to RTU	Flowmeter Signal from Transmitter		

As Built

**APPROVED FOR
CONSTRUCTION**



SCALE NTS	A.H. DATUM			
	N°	1	OF	1 SHEETS
DRAWING N°				AMEND.
486/5/7-QT215				B



As Built, Ref'd to C.L. Dwg's No's
JH86DA09, 10, 11 for
Detail

**APPROVED FOR
CONSTRUCTION**

03.2006	APPROVED FOR CONSTRUCTION	<i>[Signature]</i>
DATE	AMENDMENT	INITIALS

DUCTION / NETWORK
LEGATE

MANAGER
ENGINEERING

PRINCIPAL
ENGINEER R.P.E.Q. NO. DATE

B FILE	CAD FILE	57QT216
57QT216	57QT216	57QT216

DESIGN CHECK

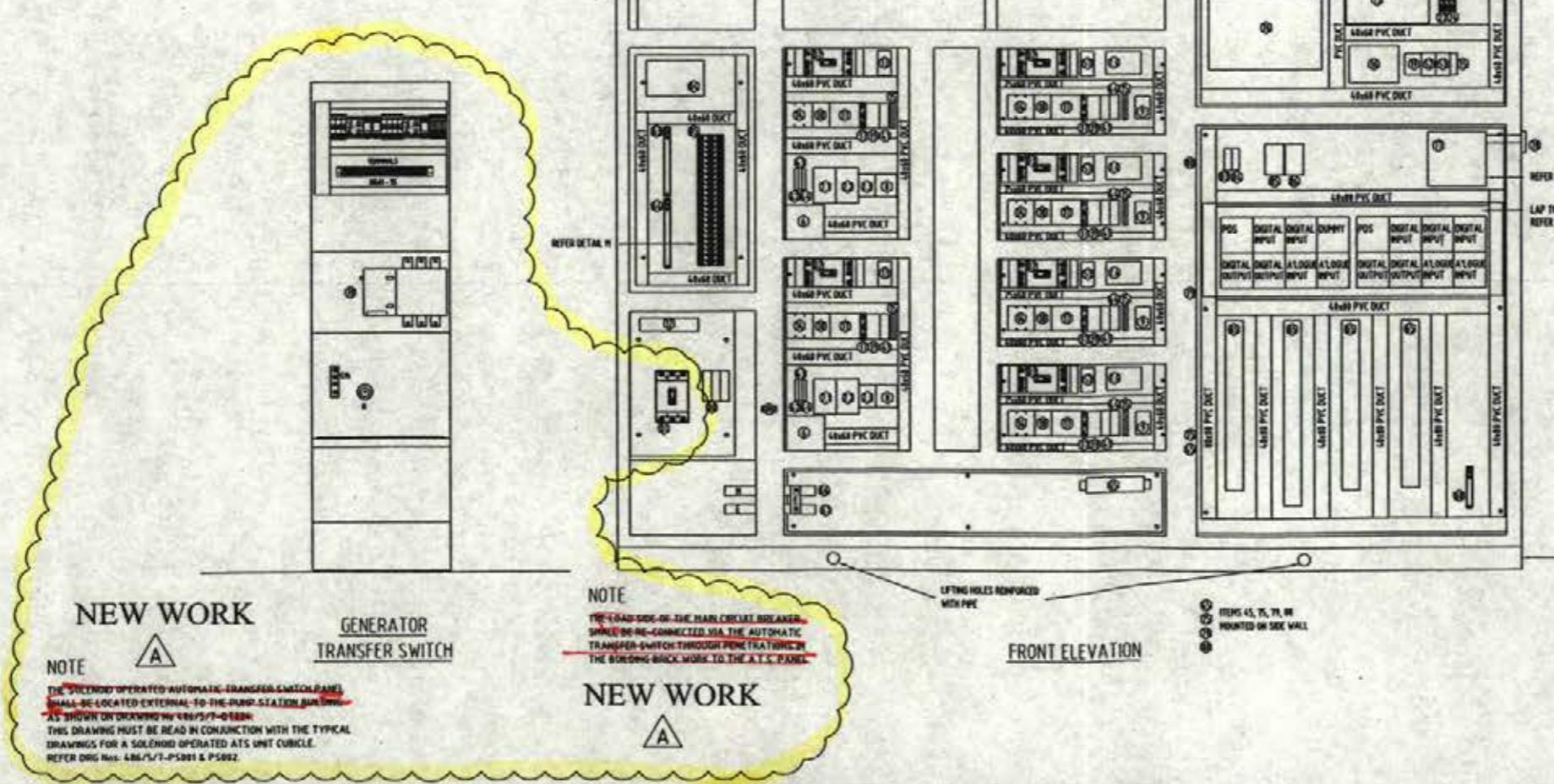
DRAWN	IDTS	1997	
DRAFTING CHECK			Brisbane City

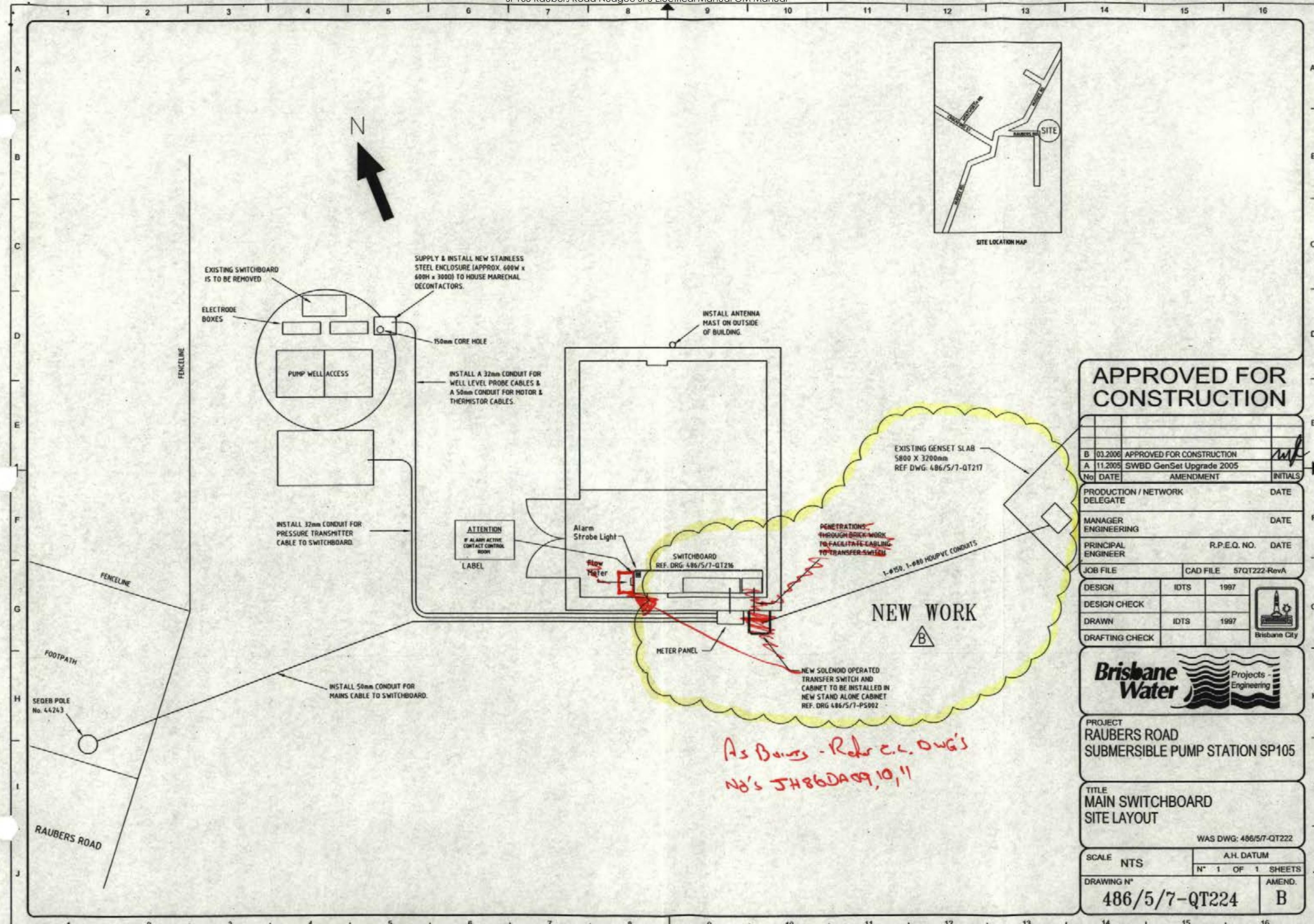


PROJECT
AUBERS ROAD
SUBMERSIBLE PUMP STATION SP105

**THE
MAIN SWITCHBOARD
GENERAL ARRANGEMENT**

SCALE NTS	A.H. DATUM		
	N° 1	OF 1	SHEETS
DRAWING N° 486/5/7-QT216			AMEND. A







SEWAGE SYSTEM IMPROVEMENT 2005

GENERATOR EMERGENCY POWER

AUTOMATIC TRANSFER SWITCHES

ELECTRICAL DRAWING INDEX

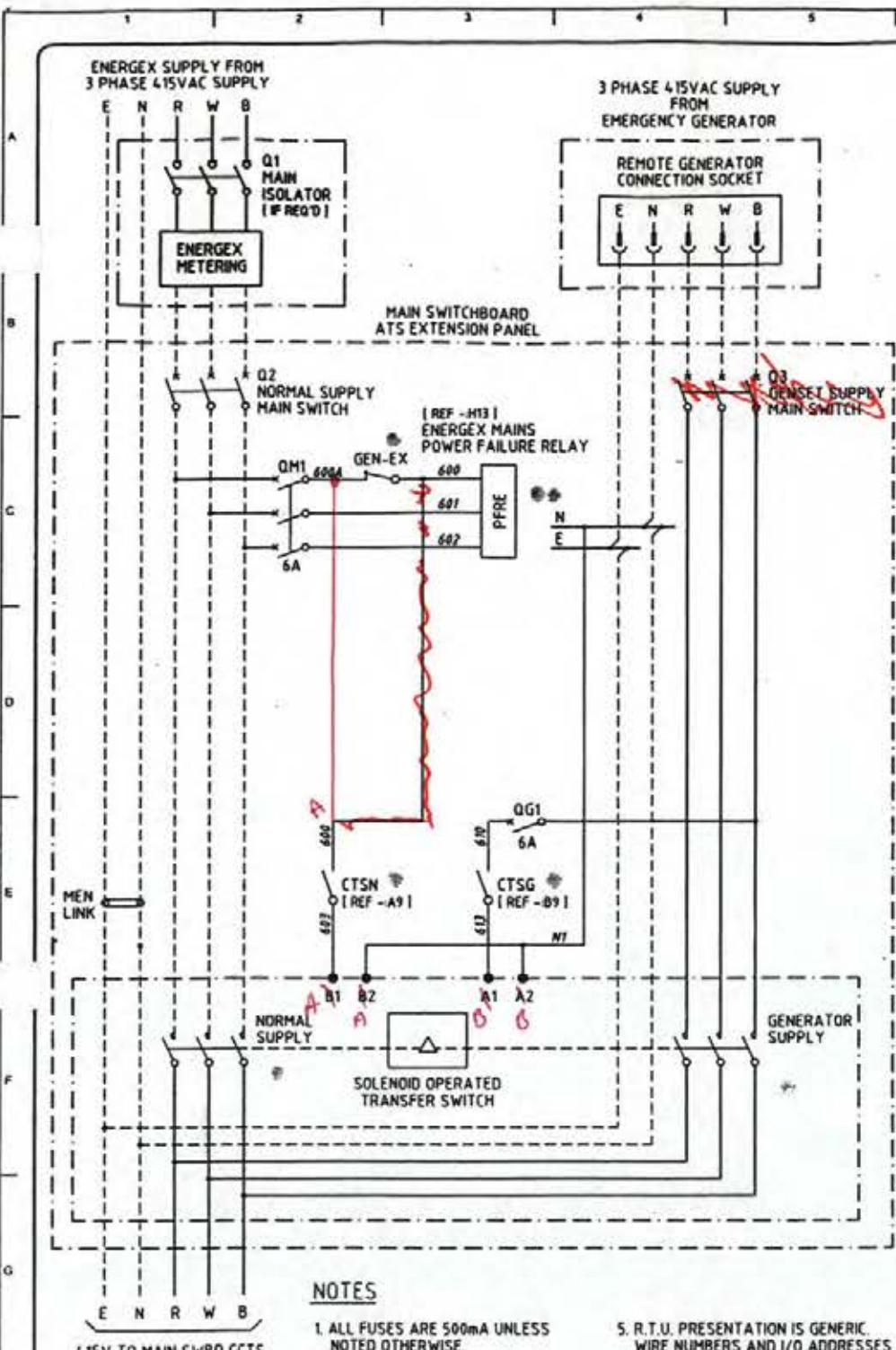
ELECTRICAL DRAWINGS INDEX

DWG N°.	TITLE	ISSUE	REVISIONS		
486/5/7-PS000	DRAWING INDEX - ELECTRICAL INSTALLATION	05.2006	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/> 3
486/5/7-PS001	TYPICAL SOLENOID OPERATED - AUTOMATIC TRANSFER SWITCH - WIRING SCHEMATIC DIAGRAM	05.2006	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/> 2
486/5/7-PS002	TYPICAL SOLENOID OPERATED - AUTOMATIC TRANSFER SWITCH - CUBICLE ARRANGEMENT	05.2006	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/> 2
486/5/7-PS003	TYPICAL MOTOR OPERATED - AUTOMATIC TRANSFER SWITCH - WIRING SCHEMATIC DIAGRAM	05.2006	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/> 2
486/5/7-PS004	TYPICAL MOTOR OPERATED - AUTOMATIC TRANSFER SWITCH - CUBICLE ARRANGEMENT	05.2006	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/> 2
486/5/7-PS005	TYPICAL SOLENOID OPERATED - AUTOMATIC TRANSFER SWITCH - INTERCONNECTION DIAGRAM	05.2006	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/> 1
486/5/7-PS006	TYPICAL MOTOR OPERATED - AUTOMATIC TRANSFER SWITCH - INTERCONNECTION DIAGRAM	05.2006	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/> 1
486/5/7-PS007	AUTOMATIC TRANSFER SWITCH - ATS EXTENSION CUBICLE - TYPICAL CONCRETE BASE ARRANGEMENT	05.2006	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/> 1
	SOLENOID OPERATED - AUTOMATIC TRANSFER SWITCH - SITE SPECIFIC INSTALLATIONS				
486/5/7-KJ440	RADNOR STREET INDOOROOPILLY - GENSET A.T.S. INSTALLATION - ELECTRICAL DRAWING INDEX	03.2006	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/> D
486/7/85-KJT070	BRISBANE STREET TOOONG - GENSET A.T.S. INSTALLATION - ELECTRICAL DRAWING INDEX	03.2006	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/> C
486/5/7-QT200	RAUBERS ROAD NORTHGATE - GENSET A.T.S. INSTALLATION - ELECTRICAL DRAWING INDEX	03.2006	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/> C
486/5/7-TQ035	SUGARMILL ROAD MEEANDAH - GENSET A.T.S. INSTALLATION - ELECTRICAL DRAWING INDEX	03.2006	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/> E
486/5/7-FD015	LAGOON CRESCENT BELLBOWRIE - GENSET A.T.S. INSTALLATION - ELECTRICAL DRAWING INDEX	03.2006	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/> C
	MOTOR OPERATED - AUTOMATIC TRANSFER SWITCH - SITE SPECIFIC INSTALLATIONS				
486/5/7-FD410	BIRKIN ROAD BELLBOWRIE - GENSET A.T.S. INSTALLATION - ELECTRICAL DRAWING INDEX	03.2006	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/> F G
486/5/7-FD135	PIONEER CRESCENT BELLBOWRIE - GENSET A.T.S. INSTALLATION - ELECTRICAL DRAWING INDEX	03.2006	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/> E
486/5/7-FK700	WIRRIBOOT COURT KARANA DOWNS - GENSET A.T.S. INSTALLATION - ELECTRICAL DRAWING INDEX	03.2006	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/> E

A, B, C, D
FOR CONSTRUCTION

3 06.06 RE-ISSUED FOR CONSTRUCTION. REVISION UPDATES	4 MJ. LIGHTBODY	5 DRAFTED	6 M.J. LIGHTBODY	7 DESIGN	8 R.P.E.Q. No.	9 DATE	10 PRINCIPAL DESIGN MANAGER	11 DATE	12 PROJECT	13 TITLE	14 SHEET No.	
2 05.06 NEW BORDER. RE-ISSUED FOR CONSTRUCTION	MJL	DRAFTING CHECK	CAD FILE	57PS000_3	B.C.C. FILE No.	DESIGN CHECK	R.P.E.Q. No.	DATE	SEWAGE SYSTEM IMPROVEMENT 2005 STANDBY GENERATORS	AUTOMATIC TRANSFER SWITCH ELECTRICAL INSTALLATION ELECTRICAL DRAWING INDEX	BRISBANE WATER DRAWING No.	
1 04.06 DRAWINGS PS005, 6 AND 7 ADDED	MJL	DRN. APD.	Reference Drawings								AMEND.	
No. DATE	AMENDMENT										486/5/7-PS000	3





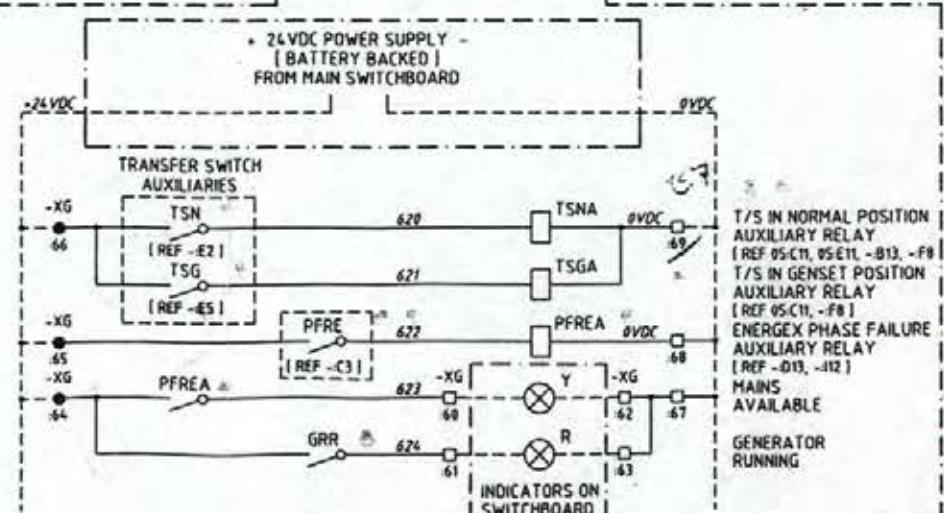
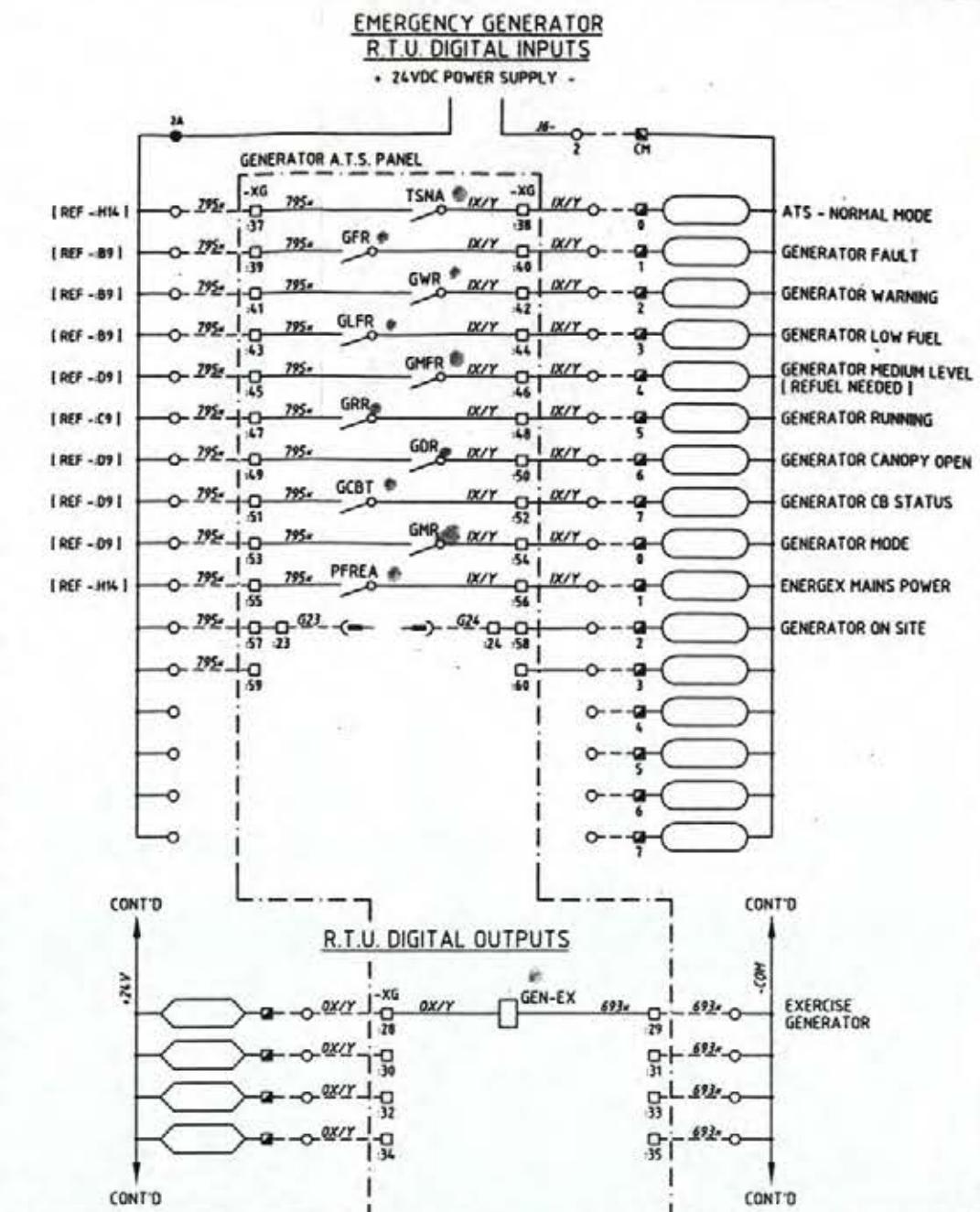
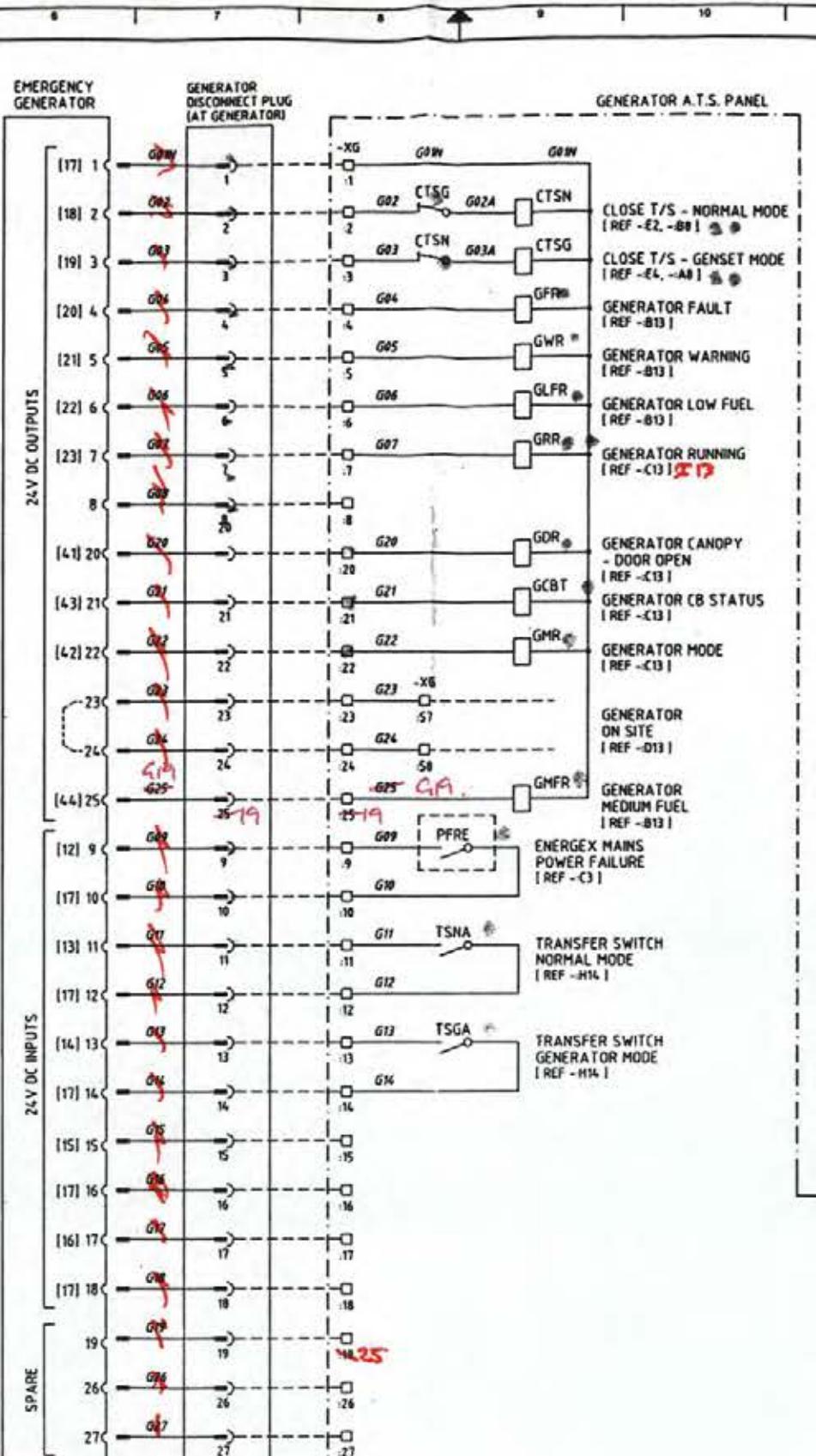
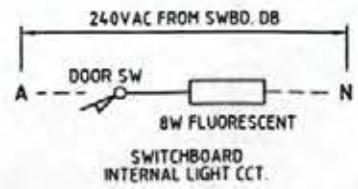
NOTES

1. ALL FUSES ARE 500mA UNLESS NOTED OTHERWISE.
 2. REFER DWG 486/5/7-PS005 FOR INTERCONNECTION DIAGRAM.
 3. R.T.U. DIGITAL I/O ADDRESSES TO BE DERIVED FROM SITE SPECIFIC DRAWING REFERENCE TABLE.
 4. GENERATOR STARTED & STOPPED
 - (a) AUTOMATICALLY UNDER POWER FAILURE CONDITIONS VIA PFRE PHASE FAILURE RELAY.
 - (b) SIMULATED PHASE FAILURE VIA R.T.U. AND GEN-FX RELAY.
 5. R.T.U. PRESENTATION IS GENERIC. WIRE NUMBERS AND I/O ADDRESSES SHALL BE DERIVED FROM THE SITE SPECIFIC DRAWINGS LISTED IN THE REFERENCE TABLE AS SHOWN BELOW.
 6. CONTACT/COIL LOCATION REFS:

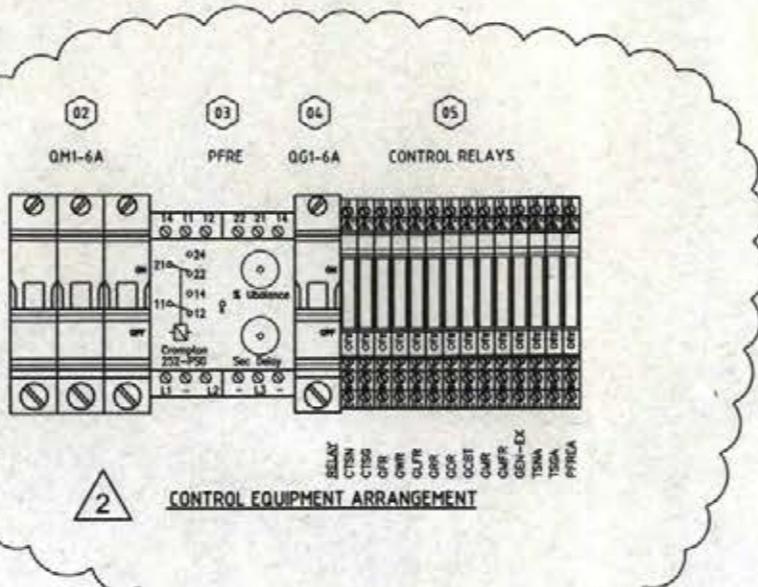
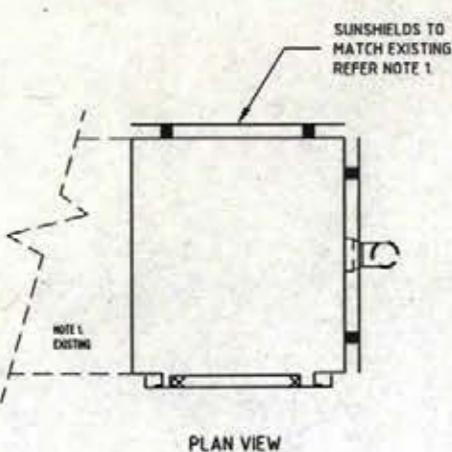
REF -C3	= REFER THIS DWG.,
	GRID REF C3
REF 05.H11	= REFER DWG. PS005,
	GRID REF H11

SITE SPECIFIC DRAWING REFERENCES:

SEWAGE PUMP STATION SITE:	SITE DWG INDEX:	RTU I/D REF DWG:
RADNOR STREET - INDOOROOPILLY	486/S-7-KJ440	486/S-7-KJ445
BRISBANE STREET - TOOLOWONG	486/T-785-KJT070	486/T-785-KJT075
RAUBERS ROAD - NORTHGATE	486/S-7-QT200	486/S-7-QT209
SUGAR MILL ROAD - MEEANDAH	486/S-7-TQ035	486/S-7-TQ040
LAGOON CRESCENT - BELLBOWRIE	486/S-7-FD610	486/S-7-FD614



FOR CONSTRUCTION



EQUIPMENT LIST

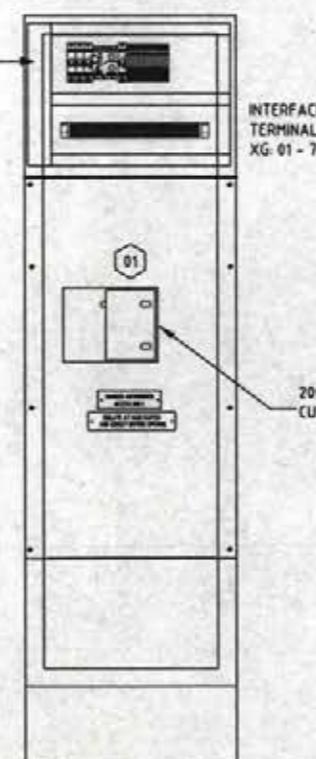
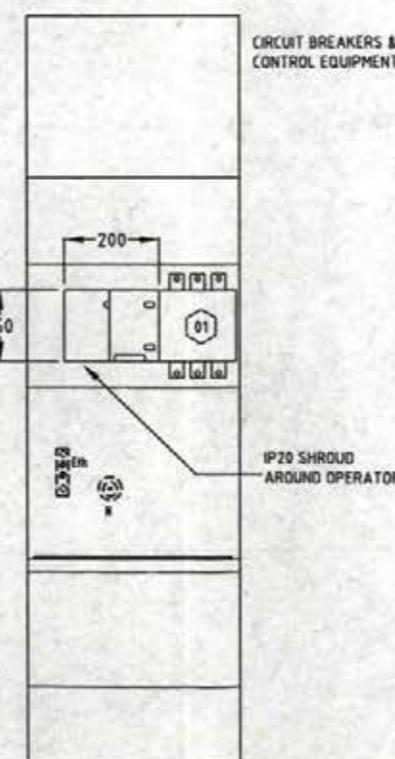
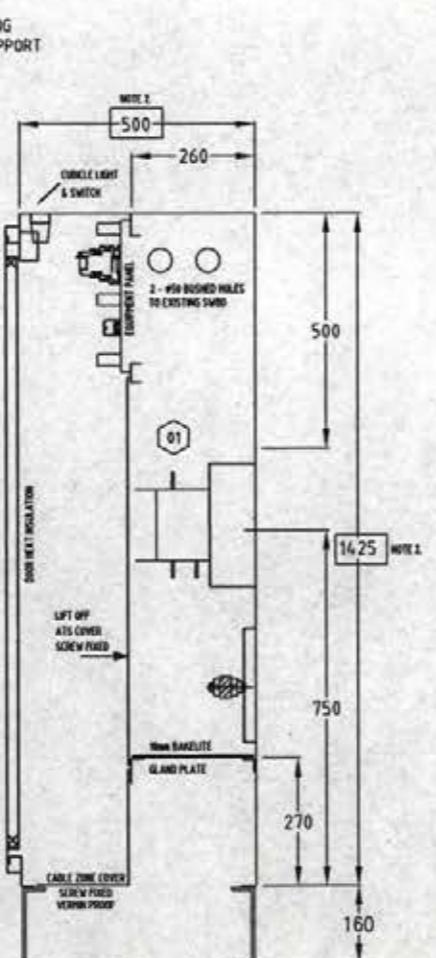
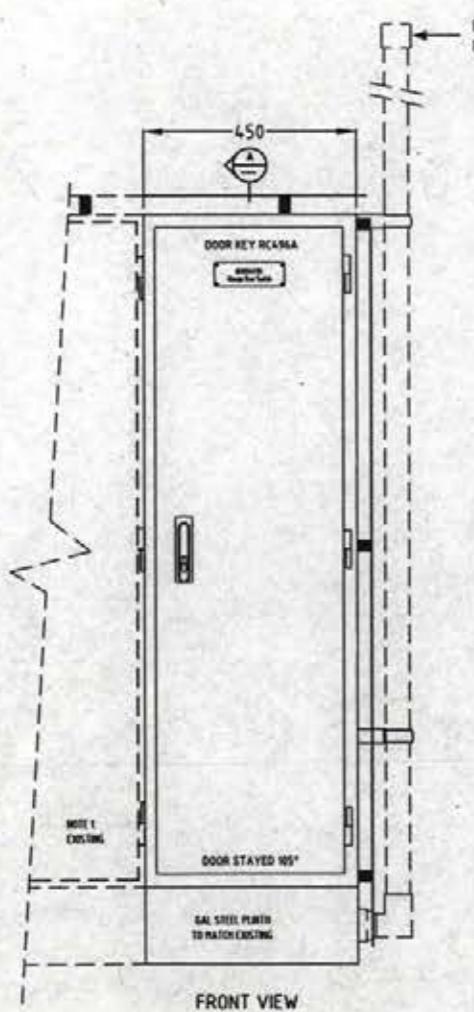
No	QTY	DESCRIPTION	SUPPLIER	MANUFACTURER	CATALOGUE No
01	1	SOLENOID AUTO TRANSFER SWITCH	NHP	AICHI	62WN3FD240VAC
02	1	MAINS VOLTS DETECTION C/B	NHP	TERASAKI	DTCB6306C
03	1	MAINS VOLTS PHASE FAILURE RELAY		CROMPTON	252-PSG
04	1	GENSET VOLTS DETECTION C/B	NHP	TERASAKI	DTCB6406C
05	15	GENSET CONTROL & INDICATION RELAYS		FINDER OR IZUMI	

SITE SPECIFIC REFERENCE DRAWINGS

SEWAGE PUMP STATION SITE:	EX. GENERAL ARRGT.	EX. CONSTR. NOTES:	REMARKS
RADBOR STREET - INDOOROPILLY	486/5/7-KI449	486/5/7-KI450	REFER NOTES 1, 2, 3 & 4
BRISBANE STREET - TOOONG	486/7/85-KJ079	486/7/85-KJ080	REFER NOTES 1, 2, 3 & 4
RAUBERS ROAD - NORTHGATE	486/5/7-QT216	486/5/7-QT219	REFER NOTES 1, 3, & 5
SUGARMILL ROAD - MEANDAH	486/5/7-T0044	486/5/7-T0045	REFER NOTES 1, 2, 3 & 4
LAGOON CRESCENT - BELLBOWRIE	486/5/7-FD619	486/5/7-FD620	REFER NOTES 1, 2, 3 & 4

NOTES

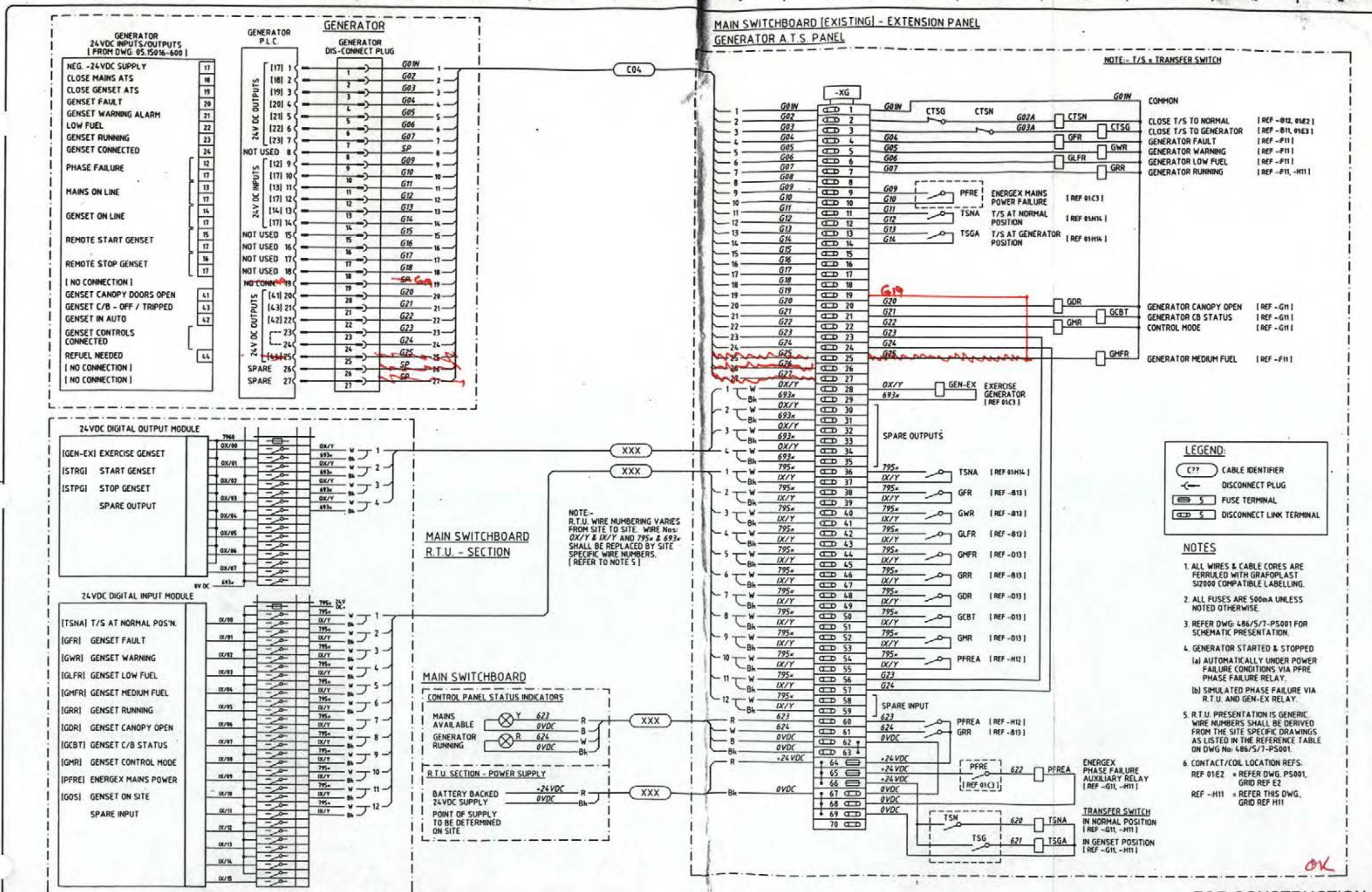
1. CUBICLE MATERIAL, CONSTRUCTION, SUN SHIELDS AND FINISH TO MATCH EXISTING SWITCHBOARDS. CONSTRUCTION TO BE VERIFIED AGAINST EXISTING REFERENCE DRG. CONSTRUCTION NOTES.
2. CHECK DIMENSIONS OF EXISTING SWITCHBOARD AND VERIFY AGAINST EXISTING GENERAL ARRANGEMENT DRAWING. ATTACH A.T.S. PANEL TO EXISTING SWITCHBOARD THROUGH SIDE WALL WITH 4-M10 BOLTS.
3. FOR WIRING DETAILS REFER DRG 486/5/7-PS001.
4. ~~WITH THE EXCEPTION OF THE RAUBERS ROAD SITE, THE INSTALLATION OF THE A.T.S. PANELS SHALL BE ATTACHED TO THE RELEVANT SITE SWITCHBOARD AS PER NOTE 2.~~
5. THE RAUBERS ROAD SITE A.T.S. PANEL SHALL BE LOCATED EXTERNAL TO THE PUMP STATION BUILDING. REFER TO DRG No. 486/5/7-01224, ~~AND NOT ATTACHED TO THE SWITCHBOARD AS PER NOTE 2. AT THIS SITE, THE RTU ANTENNA IS NOT APPLICABLE.~~
6. THE RADBOR STREET SWITCHBOARD SHALL BE FITTED WITH ITS NEW EXTENSION CABINET AND A.T.S. IN ITS CURRENT LOCATION. THIS BOARD IS TO BE RELOCATED IN THE FUTURE IN ACCORDANCE WITH THE SITE LAYOUT SHOWN ON DRAWING 486/5/7-KI454.



As Datas, Refer C.L. Drg No's
JH86DA09, 10, 11 for detail.

FOR CONSTRUCTION

2 05.06 REDRAWN. NEW BORDER. CONTROL EQUIP UPATED.	3 03.06 APPROVED FOR CONSTRUCTION	4 01.06 REDRAWN FROM C.L. DRG JH86DA01	5 DRAFTED M.J. LIGHTBODY	6 DRAFTING CHECK	7 DESIGN R.P.E.Q. No. DATE	8 PRINCIPAL DESIGN MANAGER DATE	9	10	11	12	13	14	15
1 05.06	1 03.06	0 11.06	5TPS001_2	B.C.C. FILE No.	DESIGN CHECK R.P.E.Q. No. DATE	CLIENT DELEGATE DATE	PROJECT SEWAGE SYSTEM IMPROVEMENT 2005 STANDBY GENERATORS	TITLE TYPICAL SOLENOID OPERATED AUTOMATIC TRANSFER SWITCH EXTENSION PANEL ARRANGEMENT	SHEET NO. 16	BRISBANE WATER DRAWING NO. 486/5/7-PS002	AMEND. 2		
No. DATE	AMENDMENT	DRN. APD.	Reference Drawings										



1 05.06 REDRAWN. NEW BORDER. RELAY CONFIG. UPGRADED.	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
0 04.06 CONSTRUCTION ISSUE.	M.J.			DRAFTED M.J. LIGHTBODY	DRAFTING CHECK	DESIGN R.P.E.Q. No. DATE	PRINCIPAL DESIGN MANAGER DATE								
NO DATE	AMENDMENT DRN. APD	Reference Drawings	B.C.C. FILE No.	Design Check	R.P.E.Q. No. DATE	Client Delegate Date	Brisbane Water	Project SEWAGE SYSTEM IMPROVEMENT 2005 STANDBY GENERATORS	Title TYPICAL SOLENOID OPERATED AUTOMATIC TRANSFER SWITCH INTERCONNECTION DIAGRAM	Sheet No. 18	Brisbane Water Drawing No. 486/5/7-PS005	Amend. 1			

**COMMON LOGIC Pty Ltd
Specialist Electrical Contractors**

Electrical Manual

Subject: Raubers Rd SP105

Sheet: 8
Of: 10

Section
3

Page Revision No:

Date: 17/11/06

Manual Issue No: 1 Date: 17/11/06

4.0 PART LIST

Authorised By: Grant Kerr

Electrical Manual

16/11/2006

Supplier Name	Part No	Item Description	Quant
ABK Electrical Wholesale	CLIWIPM27	27 CONTROL PIN W/P INSUL PLUG HI-IMPACT	1
Crompton Instruments	252-PSGW	415V NOMINAL VOLTAGE SENSING RELAY	1
NHP Electrical Engineering	96.72	2P 12AMP RELAY BASE FOR 56.32 RLY	2
NHP Electrical Engineering	38.51 24VDC	24V DC RELAY 1CO 6A	8
NHP Electrical Engineering	56.32 0074 24VDC	RELAY FPIN 2CO 12A 24VDC	2
NHP Electrical Engineering	62W3FD240VAC	SOLENOID OPERATED TRANSFER SWITCH NC	1
NHP Electrical Engineering	D5PP43NL3R	KIT D5 INT LED RED IND 24VAC/DC	1
NHP Electrical Engineering	D5PP53DLO	YELLOW PILOT LIGHT ROUND MAX 130V	1
NHP Electrical Engineering	D5PP53NL3A	KIT D5 INT LED YELLOW IND 24VAC/DC	1
NHP Electrical Engineering	DSRCBH1030A	DINT MCB/RCD 1P 10A 30MA 10KA	1
NHP Electrical Engineering	DTCB6106C	DINT 6KA 1P 6A CB	1
NHP Electrical Engineering	DTCB6306C	DINT 6KA 3P 6A CB	1
Phoenix Contact Pty Ltd	PH0441504	USLKG5 EARTH TERMINAL 4MM	2
Phoenix Contact Pty Ltd	PH3004100	UK5-HESI FUSE TERMINAL M205	4
Phoenix Contact Pty Ltd	PH3004362	UK5N 4MM FEEDTHRU TERMINAL GREY	40
Ramelec Pty Ltd	017216-0000	SAKR/35 LINK TERMINAL	32
Ramelec Pty Ltd	047456-0000	ASK1 FUSE TERMINAL	2

**COMMON LOGIC Pty Ltd
Specialist Electrical Contractors**

Electrical Manual

Subject: Raubers Rd SP105

Sheet: 9
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Section
4

Page Revision No:

Date: 17/11/06

Manual Issue No: 1 Date: 17/11/06

5.0 TEST SHEETS

Authorised By: Grant Kerr

COMMON LOGIC Pty Ltd A.C.N. 011 029 282 Job Card Number: **0442**
ELECTRICAL CONTRACTORS LICENCE NO. 9564

Variation To Fixed Price Proj
 Cost Plus Labour Proj.
 On Site
 Service

CUSTOMER: BRISBANE WATER Project No: SP105
 Representative Name: RALPH BERNEY
 Position: SUPERINTENDENT Date: 01/09/06
 Signature on Completion:

Power Authority Forms	<input type="checkbox"/>
Pre-Start Safety Mtg.	<input type="checkbox"/>
Risk Assessment	<input type="checkbox"/>

C/L Representative JEFF ALLAN
 Position: ELECTRICIAN Date: 01/09/06
 Mobile Phone No: 0419 585 660

START	FINISH	DETAILS	Hrs.	No MEN	TOTAL	RATE	CHARGED
		TRAVEL TO SITE					
		RAUBERS ROAD. MOUNTED EXTRA ATS PANEL. CUT IN SUBMANS TO ATS. CONNECTED GEN ✓ CONTROL CABLEING INSTALLED RTU FUSES 9 WIRING					

PLEASE SEE ATTACHED FORM FOR ADDITIONAL TOTAL LABOUR CHARGED:

ITEM No:	PART No:	ITEM DESCRIPTION.	No. ITEM	COST ITEM	TOTAL COST	%	CHARGED
1.		Switchboard Kit					
2.		as supplied					
3.							
4.							
5.							
6.							
7.							
8.							
9.							

PLEASE SEE ATTACHED FORM FOR ADDITIONAL TOTAL MATERIALS:

PROGRESS CLAIM FURTHER WORK PROJECT COMPLETED
 WORKS NOT COMPLETED REQUIRED TO NO FURTHER ACTION
 AND NOT TESTED COMPLETE PROJECT. REQUIRED

WHITE COPY - CUSTOMER YELLOW COPY - OFFICE

Certify that the Electrical work listed above
 has been tested in accordance with the
 prescribed procedure and that such work
 complies with the requirements of the State
 Electricity Act.

Signature:

ELECTRICAL LICENCE No.
40134

POLARITY TEST.
INSULATION RES. TEST.
ETH CONTINUITY TEST
FUNCTIONAL TEST

LICENCE NO.
ELEC/HICAW

**COMMON LOGIC Pty Ltd
Specialist Electrical Contractors**

Site Acceptance Tests

Subject: SAT for BW Generator Change Over Panels

Sheet:	1	Section
Of:	7	

Page Revision No: 0 Date: 29/08/06

Manual Issue No: 0 Date: 29/08/06

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1.1	INTRODUCTION	2
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1.3	SAFETY PRECAUTIONS.....	2
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2.1	ELECTRICAL CONTINUITY AND RESISTANCE OF EARTHING SYSTEM	3
2.2	CONTINUITY TEST SHEET	3
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4.3	TERMINAL VISUAL CHECKLIST	5
4.4	RELAY VISUAL CHECKLIST	5
5.0	CONTINUITY & PRE-COMMISSIONING TEST	6
5.1	CONTINUITY TEST.....	6
6.0	COMPONENT OPERATIONAL TEST	7
6.1	COMPONENT OPERATION TEST	7
6.2	AC CONTROL SYSTEMS.....	7

Test Carried out by..... *Grant Kerr*

Signed... *[Signature]* Date... 01/09/06

Test witnessed by.....

Signed... Date...

Authorised By:

COMMON LOGIC Pty Ltd
Specialist Electrical Contractors

Site Acceptance Tests

Subject: SAT for BW Generator Change Over Panels

Sheet: 2
Of: 7

Page Revision No: 0 Date: 29/08/06

Manual Issue No: 0 Date: 29/08/06

1.0 SITE ACCEPTANCE TEST

1.1 Introduction

Complete EVERY box below; if items are not applicable indicate by a N/A in the check box, any comments can be completed at the end of the checklist.

Aim: This Commissioning list is to be completed by the person/s who are undertaking the commissioning and testing of the switchboard in question. The commissioning list is designed to check the fundamental wiring of the switchboard.

Scope: This Commissioning list is designed to test the operation of the MSB and Controls only. Building wiring is subject to test by building services qualified personnel.

Legend of Symbols

Check Box, Setting to be recorded, → and Action to take

1.2 Production Unit Information

Job Number	JH86	Site Name	SP105 RAUBERS RD
	Name	Signature	Date
Testing Officer	GRANT KERR		01/09/06
Witness			

1.3 Safety precautions

Outlined below are some common safety procedures and First Aid Instruction.

SAFETY FIRST

- 1) Never test live boards alone. Always inform others of your actions and intentions.
- 2) Isolate mains or REMOVE TEST PLUG and locate close to testing area under your control.
- 3) Isolate the switchboard main switch and all circuitbreakers and fuses to completely remove all possibility of switching a live conductor when not deliberately required.
- 4) Tag all Distribution as DO NOT OPERATE removing only after tested and safe.
- 5) Insure NO LIVE WIRES are exposed at any time and a CLEAR TESTING AREA and escape route at all times.
- 6) PROTECTIVE CLOTHING and eyewear should be worn at all times when working within Live board or when appropriate.

Test Carried out by.....

Signed...  Date... 01/09/06

Test witnessed by.....

Signed... Date...

Authorised By:

JH86QT01

29 August, 2006

COMMON LOGIC Pty Ltd
Specialist Electrical Contractors

Site Acceptance Tests

Subject: SAT for BW Generator Change Over Panels

Sheet: 3
Of: 7

Section

Page Revision No: 0 Date: 29/08/06

Manual Issue No: 0 Date: 29/08/06

2.0 ELECTRICAL EARTHING SYSTEM

2.1 Electrical continuity and resistance of earthing system

- Maximum resistance of the Earthing system within the switchboard is 0.5 ohms (AS/NZS 3000:2000)
- Test resistance of the Earthing system 0.58 ohms

2.2 Continuity Test Sheet

ITEM	DETAIL	COMPARTMENT DESIGNATION AND TEST RESULT		
	Test resistance of Earthing system to compartment Answer in Ohms	Extension	Main Eth Bar	Generator
1	All Earth's wired and continuous	✓		✓
2	All metal work earthed where required	✓		
3	Isolate Individual Earth Systems and check continuity.	✓		

3.0 INSULATION RESISTANCE/ HIGH POT TEST

3.1 Insulation Resistance Test

Insulation resistance of whole or part of an installation must be a minimum of 1 Meg/ohm (AS/NZS 3000:2000)

- Insulation test conducted on all internal circuits
- All Selector Switches, Isolators and CB's are in the off position
- All electronic equipment susceptible to high voltage damage to be isolated.

3.2 Low Voltage Switchboards Insulation Test

MEGGAR VOLTAGE 1000 VOLTS
INSTRUMENT DETAILS _____

ACROSS	RESULT (M.OHM)	High Pot
Join Red, White & Blue Phases and Neutral, Test to Earth	> 200 mΩ	
Red Phase to White, Blue & N	"	
White Phase to Red, Blue and N	"	
Blue Phase to Red, White & N	"	
N to Red, White & Blue	"	

Generator Leads

Test Carried out by.....

Signed...  Date... 01/09/06

Test witnessed by.....

Signed... Date...

Authorised By:

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Site Acceptance Tests

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4.0 GENERAL WIRING AND VISUAL INSPECTION

4.1 General Wiring and Visual Inspection

- Electrical Construction Coversheet Completed and correct.

4.2 Switchgear Visual Checklist

- Carry out visual and mechanical checks to Switchgear

ITEM NO:	DETAIL	Switchboard compartments		
		Transfer switch compartment	Main switch area	Generator in general
1	Main Switch totally isolates SWBD	✓	—	✓
	Mains transfer switch device isolates mains from load. (IE switchboard)	✓	—	—
2	Generator transfer switch operates and isolates generator from the load. And mechanical interlock works	✓	—	✓
3	Cables tight and correct phase rotation. Colour match.	✓	✓	✓
4	Main Switch Correct Rating/Label	✓	—	✓
5	Neutral cable connected and continuous and tight.	✓	—	—

ITEM	DETAIL	COMPARTMENT DESIGNATION AND TEST RESULT	
		Switchboard extension	Existing Switchboard. Where modified.
1	All CBs operate correctly	✓	—
2	All incoming terminal numbers as per drawings	✓	✓
3	Check wire numbers to core numbers. Random selection.	✓	✓
4	All wires numbered as per drawings (random inspection)	—	✓
5	Cables loomed and bussed correctly to all compartments.	✓	✓
6			
7			

Test Carried out by.....

Signed...  Date... 01/09/06

Test witnessed by.....

Signed... Date...

Authorised By:

JH86QT01

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Site Acceptance Tests

Subject: SAT for BW Generator Change Over Panels

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4.3 Terminal Visual Checklist

- Carry out visual and mechanical checks on Site terminals

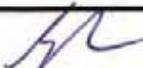
ITEM	DETAIL	COMPARTMENT AND TEST RESULT	
		Switchboard extension	Existing Board
1	All Terminals tight (Randomly check)	✓	—
2	Secure by End Clamps (Check All)	✓	—
3	Labelled correctly	✓	—
4			

4.4 Relay Visual Checklist

- Carry out visual and mechanical checks on Relays

ITEM	DETAIL	COMPARTMENT AND TEST RESULT
1	Relays labelled correctly as per Drms	✓
2	All relay coils correct voltage	✓
3	Does relay require Diode fitted?	NO
4	Common Bus Link on relays fitted	✓
5	All numbering correct	✓

Test Carried out by.....

Signed...  Date... 01/09/06

Test witnessed by.....

Signed... Date...

Authorised By:

JH86QT01

29 August, 2006

COMMON LOGIC Pty Ltd
Specialist Electrical Contractors

Site Acceptance Tests

Subject: SAT for BW Generator Change Over Panels

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5.0 CONTINUITY & PRE-COMMISSIONING TEST

5.1 Continuity Test



Wiring of circuits and connections are correct to constructed wiring schematics.



Random Continuity Test using Buzzer.



Visual Check of all wiring.

- Open all Circuit breakers and remove all fuse links
- Bridge each interface and test each output.
- Install RTU terminal Plugs into terminals
- By bridging the relevant pins and observing the relevant RTU IO feedback all circuits will be checked.
- Test each circuit in turn with corresponding drawings

ITE M NO :	Test description			Result of test
		Action	Observation	
1	Transfer to Mains	Bridge	Observe Relay GTSM	✓
2	Transfer to Gen		Observe Relay GTSG	✓
3	Generator Failed		Observe Relay GF	✓
4	Generator Fault		Observe Relay GFR	✓
5	Gen Running		Observe Relay GRUN	—
			Check Door Indicator is on when relay is ON	✓
6	Generator Connected		Observe Relay GCONN	✓
7	Doors Opened		Observe Relay GOPEN	—
8	CB Tripped		Observe Relay GCBT	✓
9	Not in Auto		Observe Relay GNAUTO	—
10	Generator Not On Site		Observe Indicator	✓
11	Spare			—
15	Remote Start		Observe Relay GSTART	Exercise GEN ✓
16	Remote Stop		Observe Relay GSTOP	—
1	Mains Failed	Close QM1	Indicator ON when PFR is ON	✓
			Check Door Indicator is ON when PFR is ON	✓
2	ATS to Mains	Manual Change to Mains	Indicator ON when TXS in Mains	—
3	ATS To Gen	Manual change to Gen	Indicator ON when TSX in GEN	✓
4	Remote Start		Indicator is on when PB is ON	NA
5	Remote Stop		Indicator is on When PB is ON	NA
6	Generator is missing		Indicator is on when PB is ON	✓

Test Carried out by... *Grant Kerr*Signed... *[Signature]* Date... 01/09/06

Test witnessed by.....

Signed... Date...

Authorised By:

JH86QT01

29 August, 2006

COMMON LOGIC Pty Ltd
Specialist Electrical Contractors

Site Acceptance Tests

Subject: SAT for BW Generator Change Over Panels

Sheet: 7 Section
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6.0 COMPONENT OPERATIONAL TEST

6.1 Component Operation Test

- Correct Operation and Voltages
- All set points and parameters set to test values if required.

6.2 AC Control Systems

- Open all circuit breakers and remove all fuse links
- Test each circuit individually, replacing fuses and closing circuit breakers in turn.

AFTER VOLTAGE APPLIED

- Apply mains supply
- Carry out voltage and operational checks (ie switch operation etc)
- Bridge control points to check operation as per BW generator commissioning Sheet
- Apply generator voltage and check operation
- Return to normal and fail the mains
- Return the mains
- Carry out a manual transfer

ITEM NO:	DETAIL	New Extension
		Test Result
1	Mains Incoming Voltage Measured OK	OK
2	Unplug set and check alarm	OK
3	Open doors	OK
4	Trip CB	OK
5	Engine temperature/Alarm	NA
6	Turn set to Auto and Manual	OK
7	Low fuel alarm	OK
8	Fuel empty alarm	OK
9		
10	Manually initiate generator start	OK
11	Manually restore to mains	OK
12	Remote start	OK
13	Remote stop	NA
14	Mains fail Start	OK
15	Return to mains	OK
16	Mains fail and then fail generator	OK (RETURNS TO MAINS)
17	Check return to to mains if gen fails	OK
18		
19		
20		

Test Carried out by.....

Signed...  Date... 01/09/06

Test witnessed by.....

Signed... Date...

Authorised By:

JH86QT01

29 August, 2006



BRISBANE WATER

Network Control Systems

IDTS POINT COMMISSIONING SHEET AND GENERATOR SUPPLY OPERATIONAL CHECKS

Pump Station Generator Connection

SITE TYPE & NO. RAUBERS ROAD

Site Name. SP105

Brisbane Water – Network Control Systems Section

NOTE: Some (or all) of the Generator associated IDTS points may be Scan Inhibited in the IDTS system. Remove the Scan Inhibit from these points before proceeding with these tests

IDTS Point : Generator Offsite

Action	Observation	Result
Connect the Control interface lead to the station	Confirm that GENERATOR OFFSITE alarm is returned to normal by IDTS	✓ Yes
Disconnect the Control interface lead to the station	Confirm that GENERATOR OFFSITE alarm is received by IDTS	✓ Yes
Reconnect the Control interface lead to the station		✓ Yes

IDTS Point : Generator Unsecured

Action	Observation	Result
Open a canopy door on the Generator	Confirm that GENERATOR UNSECURED alarm is received by IDTS	✓ Yes
Close the canopy door	Confirm that GENERATOR UNSECURED alarm return to normal is received by IDTS	✓ Yes

IDTS Point : Generator Low_fuel

Action	Observation	Result
Make the Generator low fuel warning alarm active	Confirm that GENERATOR LOW_FUEL alarm is received by IDTS	✓ Yes
Deactivate the Generator low fuel warning alarm	Confirm that GENERATOR LOW_FUEL alarm return to normal is received by IDTS	✓ Yes

IDTS Point : Generator Med_fuel

Action	Observation	Result
Make the Generator medium fuel warning alarm active	Confirm that GENERATOR MED_FUEL alarm is received by IDTS	✓ Yes
Deactivate the Generator medium fuel warning alarm	Confirm that GENERATOR MED_FUEL alarm return to normal is received by IDTS	✓ Yes

IDTS Point : Generator Warning

Action	Observation	Result
Make the Generator warning alarm active (except by low fuel)	Confirm that GENERATOR WARNING alarm is received by IDTS	✓ Yes
Deactivate the Generator warning alarm	Confirm that GENERATOR WARNING alarm return to normal is received by IDTS	✓ Yes

IDTS Point : Generator Common_fault

Action	Observation	Result
Make the Generator common fault alarm active	Confirm that GENERATOR COMMON_FAULT alarm is received by IDTS	✓ Yes
Deactivate the Generator common fault alarm	Confirm that GENERATOR COMMON_FAULT alarm return to normal is received by IDTS	✓ Yes

Brisbane Water – Network Control Systems Section

IDTS Point : Generator Automatic

Action	Observation	Result
Turn the generator to local mode	Confirm that GENERATOR AUTOMATIC alarm is RETURNED TO NORMAL by IDTS	✓ Yes
Return the generator to automatic mode	Confirm that GENERATOR AUTOMATIC alarm is received by IDTS	✓ Yes

IDTS Point : Generator CB_trippped

Action	Observation	Result
Trip the Generator circuit breaker	Confirm that GENERATOR CB_TRIPPED alarm is received by IDTS	✓ Yes
Reset the Generator circuit breaker	Confirm that GENERATOR CB_TRIPPED alarm return to normal is received by IDTS	✓ Yes

IDTS Point : Generator Running

Action	Observation	Result
Start the Generator	Confirm that GENERATOR RUNNING alarm is received by IDTS	✓ Yes
Stop the Generator	Confirm that GENERATOR RUNNING alarm return to normal is received by IDTS	✓ Yes

IDTS Control Points : Generator Exercise

Action	Observation	Result
Confirm the Generator is available to run, but not running		
Set the IDTS control point GENERATOR START EXERCISE and send to the site	Confirm that the Generator starts and runs off-line	✓ Yes
	Confirm that GENERATOR RUNNING alarm is received by IDTS	✓ Yes
Set the IDTS control point GENERATOR STOP EXERCISE and send to the site	Confirm that the Generator stops	✓ Yes
	Confirm that GENERATOR RUNNING alarm return to normal is received by IDTS	✓ Yes

IDTS Point : Power_supply Energex power

Action	Observation	Result
Turn the generator to local mode		
Fail the Energex power	Confirm that POWER_SUPPLY ENERGEX POWER alarm is received by IDTS	✓ Yes
Restore the Energex power	Confirm that POWER_SUPPLY ENERGEX POWER alarm return to normal is received by IDTS	✓ Yes

Brisbane Water – Network Control Systems Section

IDTS Point : ATS Energix , and Generator supply operational checks

NOTE: The purpose of these operational checks is;

- *To confirm the pumps are interlocked under Generator supply (where required)*
- *To confirm the code changes have not interfered with the operation of the Surcharge Imminent probe.*

Action	Observation	Result
Ensure the Generator is in Automatic mode		
Ensure the pumps are selected for local mode		
Ensure there is enough sewage in the well for the pumps to run continuously for one minute		
Fail the Energex power to the Generator	Confirm that the Generator starts and supplies power to the station	✓ Yes
	Confirm that ATS ENERGEX alarm is received by IDTS	✓ Yes
Generator Capacity	Confirm the Generator will run both pumps under generator supply.	✓ Yes
Site: BirkinRd.	Confirm the RTU will run a maximum of two pumps under generator supply.	NA
Restore Energex power and record the time taken for the Generator controller to return the station power to Energex supply	Time for station power to return to Energex supply	...300..... Secs
	Confirm that ATS CLOSED alarm return to normal is received by IDTS	✓ Yes
Record time taken for the Generator to stop after station power returns to Energex supply	Time for Generator to stop after station power returns to Energex supply300.... Secs

Brisbane Water – Network Control Systems Section

Pump Automatic operation, and
Surcharge Imminent operation under Generator supply

Action	Observation	Result
Fail the Energex power to the Generator	Confirm that the Generator starts and supplies power to the station	✓ Yes
Ensure the pumps are selected for remote mode	Fixed speed pump sites: Confirm that the duty pump lowers the well to the Duty A stop level and stops	NA
	Variable speed pump sites: Confirm that the duty pump operates on variable speed control satisfactorily	✓ Yes
Ensure the well level is below the Duty A start level using pump local control as required		✓ OK
Ensure the pumps are selected for remote mode and are stopped		✓ OK
Activate the surcharge imminent probe for at least 10 sec	Confirm that WET_WELL SURCHARGE_IMMINENT alarm is received by IDTS	✓ Yes
	Confirm that all pumps (available under Generator supply) start	✓ Yes
Return the surcharge imminent probe to normal	Confirm that WET_WELL SURCHARGE_IMMINENT alarm return to normal is received by IDTS	✓ Yes
Restore Energex power indication to the Generator and allow the Generator controller to return the station power to Energex supply		✓ OK

IDTS Points and Generator Supply

Operational Checks commissioned by Date

**COMMON LOGIC Pty Ltd
Specialist Electrical Contractors**

Electrical Manual

Subject: Raubers Rd SP105

Sheet: 10
Of: 10

Section
5

Page Revision No:

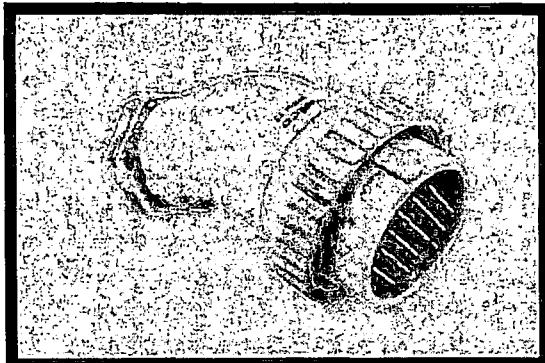
Date: 17/11/06

Manual Issue No: 1 Date: 17/11/06

6.0 TECHNICAL INFORMATION

Authorised By: Grant Kerr

Catalogue No. WIPM27



Colour Options

No colour options
 TR Transparent

More colour options may be available. Please check with your nearest Clipsal office.

Description:

Low Voltage Multipin - 27 Pin Maximum. Wilco Industrial Hi-Impact Insulated Angle Plug.
Wilco Industrial Hi-Impact Insulated Plugs One Piece Angle With Screw Ring - IP56

Item Type

02 Industrial Products

Business Area

40 Industrial Switchgear

Product Group

403 Wilco Hi-Impact Industrial Switchgear

Item Group

40303 Plugs & Extension Sockets

Brochures Available:

A Specifiers guide to Clipsal Industrial

A Specifiers guide to Clipsal Industrial

A Specifiers guide to Clipsal Industrial

Crompton Electronics / Energy Division

INSTALLATION INSTRUCTIONS

Page 1 of 2

Ref: IW250PMSH – Rev 6 – Sept 02

Models Covered

252-PMM	252-PMT	252-PSF	252-PSG
253-PH3	252-PMM	252-PMT	

Introduction**Thermistor Trip Relay (252-PMM & 252-PMT).**

The trip inputs are monitored within settable limits. In the event of the input moving outside these limits, the unit will initiate a trip signal via a double pole changeover relay. An illuminated green LED indicates when the thermistor temperature is within normal working limits. The unit is designed such that the alarm relay is energised when normal temperatures are reached.

Model 252-PMM has the facility for manual resetting, so that the trip condition remains after normal operating temperature is reached, until manual intervention occurs.

Phase Balance Relay (252-PSF & 252-PSG)

Trip inputs are monitored within settable limits. In the event of the input moving outside these limits, the unit will initiate a trip signal via a double pole changeover relay. An illuminated red LED indicates that the supply is within limits.

Speed Sensing Relay (253-PH3)

Trip inputs are monitored within settable limits. In the event of the input moving outside these limits, the unit will initiate a trip signal. The illuminated red LED's indicates that the single pole output relays are in an energised state and at normal running speed all three relays should be energised. Units are factory adjusted for normal running speed = 0.75mA output. The meter adjust pot on the product front is used for this requirement, which also ensures the trip levels are set to the calibrated values. Terminal 8 is connected to terminal 5 internally. Terminals 15 and 16 give a 0/1mA signal proportional to speed.

No.1 Relay energises on rising speed**No.2 Relay energises on rising speed****No.3 Relay de-energises on rising speed**

This product is designed for use only with magnetic coil inductive sensors.

Warning

- During normal operation, voltages hazardous to life may be present at some of the terminals of this unit. Installation and servicing should be performed only by qualified, properly trained personnel abiding by local regulations. Ensure all supplies are de-energised before attempting connection or other procedures.
 - It is recommended adjustments be made with the supplies de-energised, but if this is not possible, then extreme caution should be exercised.
 - Terminals should not be user accessible after installation and external installation provisions must be sufficient to prevent hazards under fault conditions.
 - This unit is not intended to function as part of a system providing the sole means of fault protection - good engineering practice dictates that any critical function be protected by at least two independent and diverse means.
- Never open circuit the secondary winding of an energised current transformer.

Never open circuit the secondary winding of an energised current transformer.

Protector Trip Relays**DIN Rail & Wall Mounted 250 Series****Thermistor Trip, Speed Sensing &****Phase Angle****Installation**

The Protector should be installed in a dry position, not in direct sunlight and where the ambient temperature is reasonably stable and will not be outside the range 0 to 60 degrees Celsius. Mounting will normally be on a vertical surface but other positions will not affect the operation.

Vibration should be kept to a minimum. The Protectors are designed for mounting on a 35mm rail to DIN 46277.

Alternatively they may be screw fixed; a special adaptor is supplied to mount 252 types.

To mount a protector on a DIN rail, the top edge of the cutout on the back is hooked over one edge of the rail and the bottom edge carrying the release clip clicked into place. Check that the unit is firmly fixed. Removal or repositioning may be achieved by levering down the release clip and lifting the unit up and off the rail.

Connection diagrams should be carefully followed to ensure correct polarity and phase rotation where applicable.

External voltage transformers may be used on 252-PSF and 252-PSG to extend the range:

252-PMM, 252-PMT & 253-PH3

Pick up, input and output leads should be kept separate from any other wiring.

Setting Controls (252-PSF, 252-PSG)

These products have two calibration facilities that can be set to suit operating requirements and they are factory calibrated as follows:-

1. % unbalance set points
Voltages of and below 380 volts L-L are calibrated to 1.0% class index of rated voltage. Voltages above 380 volts L-L are calibrated to 1.5% class index of rated voltage.
2. Time Delay
For all voltage ranges 10% maximum delay.
3. Voltage Withstand
Continuous overload = 1.35 x rated voltage

Setting Up (all other models)

The calibration marks around the controls are provided as a guide if the installer does not have access to accurate equipment. The maximum error of the calibration marks is typically 10% of the span of the control concerned.

Maintenance

The unit should be inspected to normal standards for this class of equipment. For example remove accumulations of dust and check all connections for tightness and corrosion. In the unlikely event of a repair being necessary it is recommended that the unit be returned to the factory or to the nearest Crompton Instruments Service Centre.

Electromagnetic Compatibility

This unit has been designed to provide protection against EM (electro-magnetic) interference in line with requirements of EU and other regulations. Precautions necessary to provide proper operation of this and adjacent equipment will be installation dependent and so the following can only be general guidance:-

- Avoid routing wiring to this unit alongside cables and products that are, or could be, a source of interference.



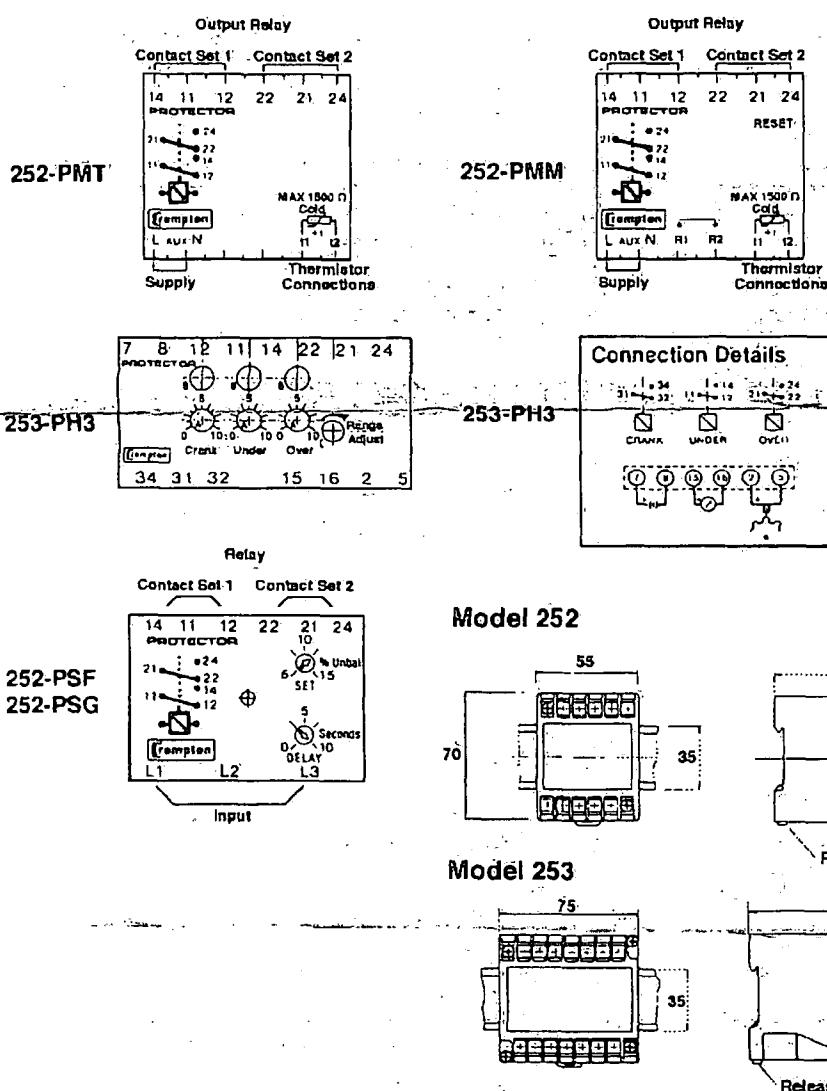
Page 2 of 2

Ref: IW250PMH - Rev 6 - Sept 02

INSTALLATION INSTRUCTIONS**Protector Trip Relays****DIN Rail & Wall Mounted 250 Series
Thermistor Trip, Speed Sensing &
Phase Angle**

- The auxiliary supply to the unit should not be subject to excessive interference. In some cases, a supply line filter may be required.
- To protect the product against incorrect operation or permanent damage, surge transients must be controlled. It is good EMC practice to suppress differential surges to 2kV or less at the source. The unit has been designed to automatically recover from typical transients, however in extreme circumstances it may be necessary to temporarily disconnect the auxiliary supply for a period of greater than 5 seconds to restore correct operation.

- Screened communication and small signal leads are recommended and may be required. These and other connecting leads may require the fitting of RF suppression components, such as ferrite absorbers, line filters etc., if RF fields cause problems.
- It is good practice to install sensitive electronic instruments that are performing critical functions in EMC enclosures that protect against electrical interference causing a disturbance in function.



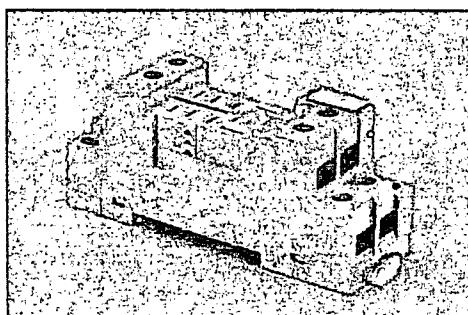
The information contained in these installation instructions is for use only by installers trained to make electrical power installations and is intended to describe the correct method of installation for this product. However, Tyco Electronics has no control over the field conditions, which influence product installation. It is the user's responsibility to determine the suitability of the installation method in the user's field conditions. Tyco Electronics' only obligations are those in Tyco Electronics' standard Conditions of Sale for this product and in no case will Tyco Electronics be liable for any other incidental, indirect or consequential damages arising from the use or misuse of the products. Crompton is a trade mark.

**Tyco Electronics UK Limited****Crompton Instruments**

Freebournes Road, Witham, Essex, CM8 3AH, UK

Phone: +44 1376 509 509 Fax: +44 1376 509 511

<http://energy.tycoelectronics.com>



Representative Image Only

Catalogue Number: 96.72**Description:** SKT FOR 56.32 RLY + LED MOD**List Price:** Refer to our eCatalogue**Unit Of Measure:** EA**Price Schedule:** B2**All prices are exclusive of GST**

Relays / Accessories

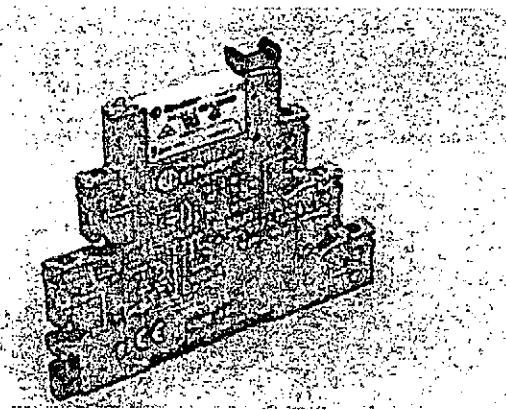
Brand: Finder**Accessory type:** Plug-in base

Features

- DIN rail mounting socket with open terminals, to suit miniature power relays, flat pin 2 C/O (8 pin), eg 56.32.
- This socket also accepts the 99 series LED modules.

Benefits

- The 96.72 series sockets are designed for DIN rail mounting, with the added benefit of incorporating an LED indicator in the same socket as the relay.
- Provides a space saving relay / indicator combination.
- Relay retaining clips also available.



Catalogue Number:

38.51 24VDC

Description:

PLEASE ORDER 385124VACDC

List Price \$ (Not including GST):

46.55

Unit of Measure:

EA

Price Schedule:

B2

Relays Interface Module

Relays Interface Module

Contact arrangement

1 C/O 6A AC1 250VAC

Voltage

24V DC

Number of pins

3

Features

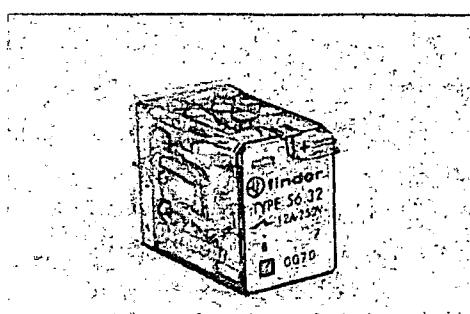
- Miniature Din rail mounting type Relay interface module
- Supply voltage: 24V DC
- 1 C/O contact, 6A, 250V AC 1

Benefits

- Compact Din mount presentation
- Low coil consumption



finder



Representative Image Only

Catalogue Number: 56.32.0074 24VDC

Description: RLY W/PB+LED+FLG FPIN 2CO 12A

List Price: Refer to our eCatalogue

Unit Of Measure: EA

Price Schedule: B2

All prices are exclusive of GST

Relays-plug-in type / Flat pin

Brand: Finder

Contact arrangement: 2 C/O

Voltage: 24V DC

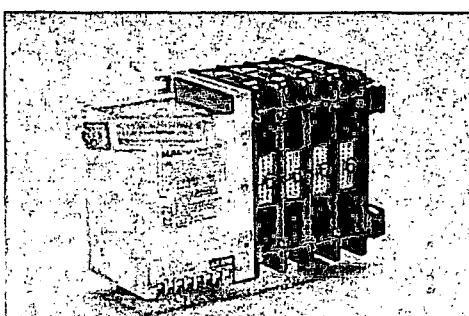
Number of pins: 8

Features

- 24VDC, 12A.
- 2 C/O contacts.
- Flat pins.

Benefits

- Lockable test button.
- Mechanical flag indicator and LED.

Aichi

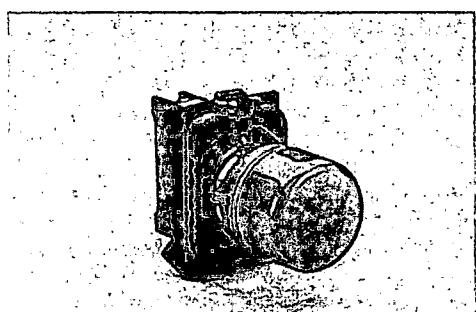
Representative Image Only

Catalogue Number: 62W-3FD 240VAC**Description:** TRANS.SW.NO OFF 200A3POLE240VA**List Price:** Refer to our eCatalogue**Unit Of Measure:** EA**Price Schedule:** A4**All prices are exclusive of GST****Transfer switches / Basic (BTS)****Brand:** Aichi**Amp rating:** 200**kA rating:** 25**Features**

- Single coil operation "W" series.
- Simple mechanical operation.
- 100A to 5000A switch range.
- Pulsed DC coil system.
- Load terminals common.
- Manual operating handle supplied for use in the event of control voltage failure.
- 125V DC 1 ratings to 2000A (each pole).
- All terminal covers provided.
- Control circuit "MOVs" provided, protects control circuit from 'spikes'.
- Can be used with Terasaki logic panel.
- 2 C / O Auxiliaries fitted as standard (extra on request).

Benefits

- External mechanical interlock unnecessary.
- Maintained coil supply not required.
- Additional load connections not required.
- DC switching capability.



Representative Image Only

Catalogue Number: D5P-P43NL3R

Description: KIT D5 INT LED RED IND 24VAC

List Price: Refer to our eCatalogue

Unit Of Measure: EA

Price Schedule: A2

All prices are exclusive of GST

Pushbutton Products / Pilot Light and Buzer

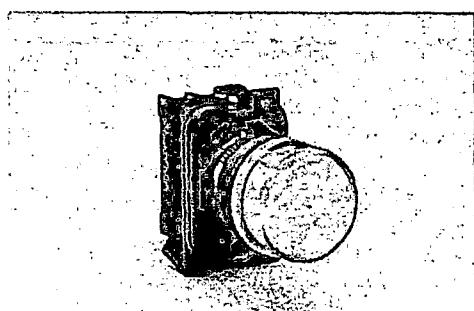
Brand: Sprecher + Schuh**Mounting Size:** 22.5mm**Specification:** Complete**Shape:** Round**Style / Frame:** Standard**Colour:** Red**Lamp Block:** Full Voltage

Features

- Part of the vast D5 range of matching 22.5 mm. control and signalling units providing IP 66 front protection.
- Assembled round plastic pilot light fitted with coupling plate and clip-on LED.
- Easy to mount.
- Wide range of legends available to complete the assembly.
- Individually packaged component.

Benefits

- The D5 range combines aesthetic appeal with robust flexibility to suit heavy-duty industrial control applications.
- Readily visible.
- Pre-assembly saves time.
- When fixing pilot light it will hold in place without a notched panel hole.
- Saves time and allows fitting by one person only.
- Simplified ordering and spares holding.



Representative Image Only

Catalogue Number: D5P-P53NL3A

Description: KIT D5 INT LED YLW IND 24VAC

List Price: Refer to our eCatalogue

Unit Of Measure: EA

Price Schedule: A2

All prices are exclusive of GST

Pushbutton Products / Pilot Light and Buzzer

Brand: Sprecher + Schuh

Mounting Size: 22.5mm

Specification: Complete

Shape: Round

Style / Frame: Standard

Colour: Yellow

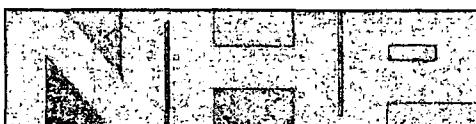
Lamp Block: Full Voltage

Features

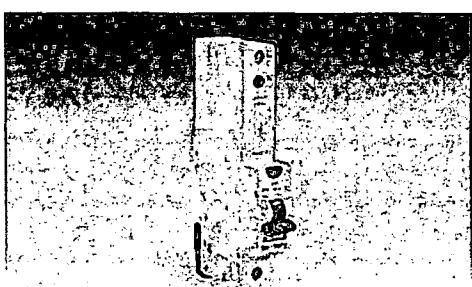
- Part of the vast D5 range of matching 22.5 mm. control and signalling units providing IP 66 front protection.
- Assembled round plastic pilot light fitted with coupling plate and clip-on LED.
- Easy to mount.
- Wide range of legends available to complete the assembly.
- Individually packaged component.

Benefits

- The D5 range combines aesthetic appeal with robust flexibility to suit heavy-duty industrial control applications.
- Readily visible.
- Pre-assembly saves time.
- When fixing pilot light it will hold in place without a notched panel hole.
- Saves time and allows fitting by one person only.
- Simplified ordering and spares holding.



TERASAKI
Innovative Protection Solutions



Representative Image Only

Catalogue Number: DSRCBH1030A

Description: MCB/RCD 1P 10A 30mA 10kA DIN-T

List Price: Refer to our eCatalogue

Unit Of Measure: EA

Price Schedule: T3

All prices are exclusive of GST

Circuit breakers - Earth Leakage / ELCB Din

Brand: Terasaki

Current rating: 10A

Number of poles: 1P + N

Modules: 1 (18)

Trip sensitivity: 30mA

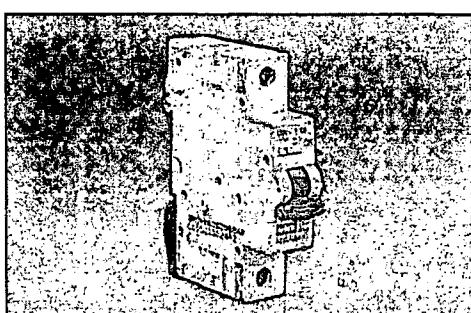
Voltage: 240V AC

Features

- Short circuit protection 10kA.
- 50kA and 65kA fuse back up.
- Sensitivities 10mA and 30mA.
- 6A, 10A, 16A, 20A, 25A, 32A & 40A Current ratings.
- Type A RCD.
- On and Off indication with colour coding.
- Handle can be sealed and locked in "on" or "off" position.
- IP20 finger protection.
- Wide range of accessories.
- Information clearly labeled on front of RCD.
- Flexible 1.2m long neutral pigtail.

Benefits

- Space saving, same width Din-T MCB.
- Can be directly retrofitted replacing a Din-T MCB.
- High level of short circuit protection.
- Wide range of current settings.
- Approved for use in Australia and New Zealand.
- Conforms to international standards.
- Terminals clearly labeled for easy connection.



Representative Image Only

Catalogue Number: DTCB6106C

Description: MCB 6KA 1P 6A C CURVE DIN

List Price: Refer to our eCatalogue

Unit Of Measure: EA

Price Schedule: T1

All prices are exclusive of GST

Circuit breakers-miniature / MCB DIN 6 kA

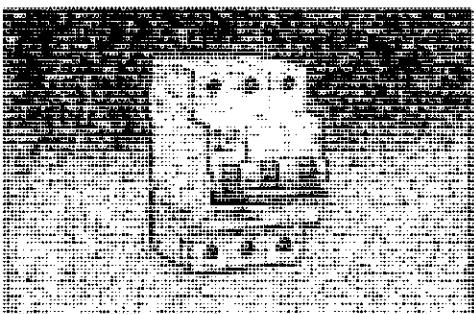
Brand: Terasaki
Current rating: 6A
Number of poles: 1 Pole
Curve type: C Curve

Features

- 6kA, 10kA & 15kA short circuit breaking capacities available.
- 50kA and 65kA fuse backup.
- On and Off indication with colour coding.
- Handle can be sealed and locked in "on" or "off" position.
- High speed operation and rapid arc quenching.
- Consistant line and load terminal height for Din-T 6, 10 & 15 MCB's.
- IP20 finger protection.
- 35mm² capacity terminals.
- Wide range of accessories.
- Conformity to Australian and International standards.
- Versatility in mounting, distribution boards, switchgear panels and consumer units.
- High selectivity figures.
- Information clearly labeled on front of breaker.

Benefits

- Elimates confusion regarding the operating state of the MCB.
- Increased protection as contacts open through overload or short circuit even when handle is sealed in the "on" position.
- Saves cost, allows for a fuseless system and confines power outages to the effected circuit preventing wide spread loss of power.
- Can fit larger cables.
- Provides greater flexibilty of use.
- Security on conformitity.
- Special data very accessible.



Representative Image Only

Catalogue Number: DTCB6306C

Description: MCB 6KA 3P 6A C CURVE DIN

List Price: Refer to our eCatalogue

Unit Of Measure: EA

Price Schedule: T1

All prices are exclusive of GST

Circuit breakers-miniature / MCB DIN 6 kA**Brand:** Terasaki**Current rating:** 6A**Number of poles:** 3 Pole**Curve type:** C Curve**Features**

- 6kA, 10kA & 15kA short circuit breaking capacities available
- 50kA and 65kA fuse backup
- On and Off indication with colour coding
- Handle can be sealed and locked in "on" or "off" position
- High speed operation and rapid arc quenching
- Consistant line and load terminal height for Din-T 6, 10 & 15 MCB's
- IP20 finger protection
- 35mm² capacity terminals
- Wide range of accessories
- Conformity to Australian and International standards
- Versatility in mounting, distribution boards, switchgear panels and consumer units
- High selectivity figures
- Information clearly labeled on front of breaker

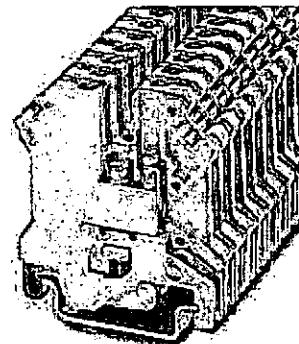
Benefits

- Eliminates confusion regarding the operating state of the MCB
- Increased protection as contacts open through overload or short circuit even when handle is sealed in the "on" position
- Saves cost, allows for a fuseless system and confines power outages to the effected circuit preventing wide spread loss of power
- Can fit larger cables
- Provides greater flexibility of use
- Security on conformatiit
- Special data very accessible



Universal Ground Terminal Block USLKG

Article description	USLKG 5
Order No.	0441504 USLKG 5 0441517 USLKG 5-1
EC Prototype certificate no.	KEMA 99ATEX4487U
Assembly on mounting rails	NS 32 acc. to EN 60715-G 32 NS 35 acc. to EN 60715-TH 35 See page 2
Assembly instructions	
Temperature range of use	-40 °C to +90 °C



Technical data according to EN 50019 (Increased Safety "e")

Connection capacity

Rated cross section	4 mm ²	AWG 12
Max. conductor cross section	4 mm ²	AWG 12
Connectable conductor cross sections	0.2 - 4 mm ² rigid and flexible	AWG 24 - 12

Explosion protection data

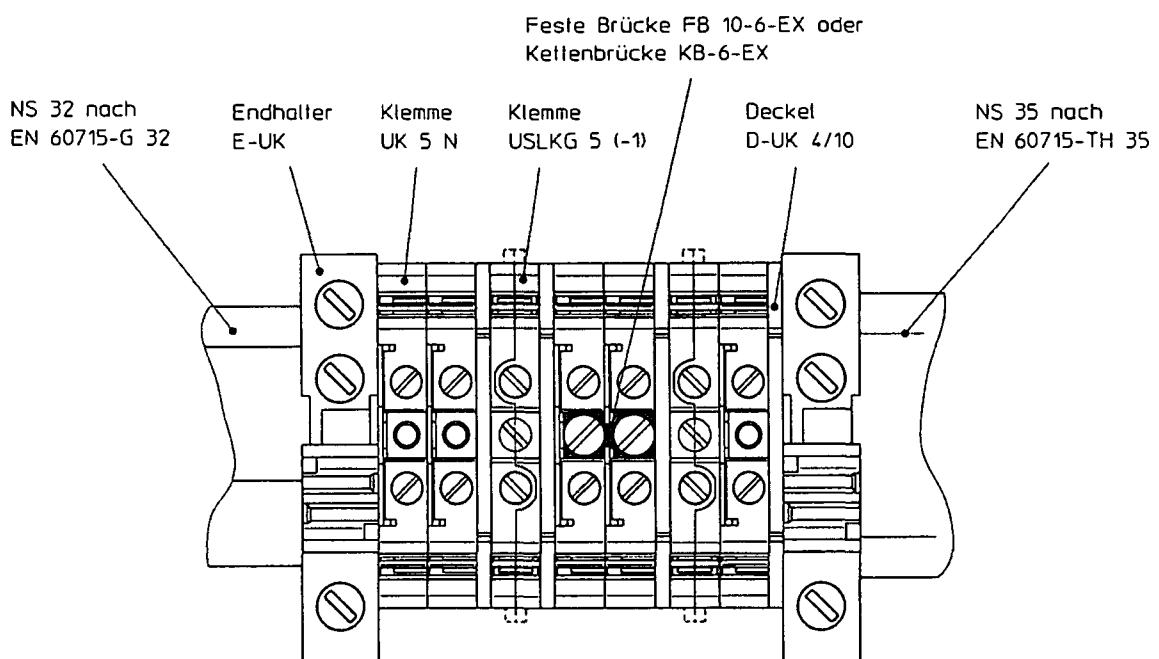
Max. operating voltage	550 V on NS 32 750 V on NS 35	Mounted in rows with UK 5 N
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Data of insulation material

Description	PA 6.6
Creep resistance acc. to IEC 60112 / material group	CTI 600 / I

Important assembly instructions – increased safety "e"

When adding other series and sizes of terminal blocks and using additional accessories, the required air and creepage distances have to be observed.



Phoenix Contact GmbH & Co. KG
Flachsmarktstrasse 8
D-32825 Blomberg, Germany
Germany

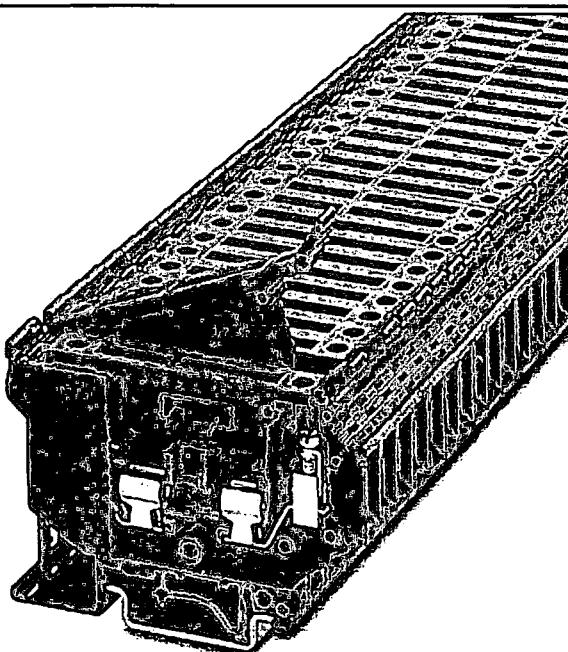
- +49 – (0) 52 35 – 3-00
- +49 – (0) 52 35 – 3-4 12 00
- www.phoenixcontact.com

UK 5-HESI



Please note that the data given here has been taken from the online catalog. For comprehensive information and data, please refer to the user documentation at <http://www.download.phoenixcontact.com>. The General Terms and Conditions of Use apply to Internet downloads.

► Extract from the online catalog



Fuse terminal block for cartridge fuse insert, cross section: 0.2 - 4 mm², AWG: 26 - 10, width: 8.2 mm, color: black

Order No.	3004100
Ord designation	UK 5-HESI
EAN	4017918090623
Pack	50 Pcs.
Customs tariff	85363010
Weight/Piece	0,018509 KG
Catalog page information	Page 266 (CL-2005)

► Product notes

WEEE/RoHS-compliant since: 01/01/2003



IMPORTANT : This date is valid for Customers in Germany only. Date Format is MM/DD/YYYY. Please contact your local in-country Phoenix Contact location or designated business partner for a Logistics Compliant date in your area. In order to guarantee delivery of RoHS-Compliant product, please purchase Phoenix Contact parts from authorized Phoenix Contact representatives and distributors.



Feed-Through Modular Terminal Block

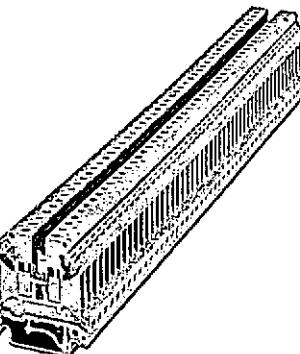
Article description	ÜK 5 N
Order No.	3004362
EC Prototype certificate no.	KEMA 98ATEX1651U

Identification 0344 Ⓛ II 2 GD EEx e II
KEMA 98ATEX1651U

Assembly on mounting rails NS 32 acc. to EN 60715-G 32
NS 35 acc. to EN 60715-TH 35

Assembly instructions See page 2

Temperature range of use -40 °C to +80 °C



Technical data according to EN 50019 / EN 50020

Max. operating voltage Increased safety "e"	750 V	550 V on NS 32
Intrinsic safety "I"	60 V	

Nominal current 30 A

Max. load current 38 A

Connection capacity

Rated cross section Rigid / flexible	4 mm ²	AWG 12
Max. conductor cross section	6 mm ²	AWG 10
Connectable conductor cross sections	0.2 – 6 mm ²	AWG 24 – 10

Multi-conductor connection (two conductors with same cross section)

Rigid / flexible	0.2 – 1.5 mm ²	AWG 24 – 16
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Data of insulation material

Description	PA 6.6	
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Creep resistance acc. to IEC 60112 / material group CTI 600 / I

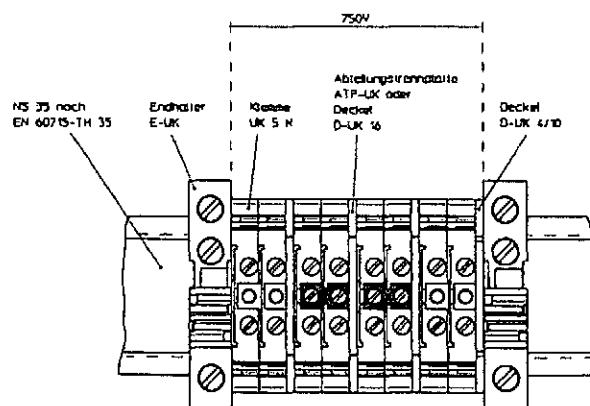
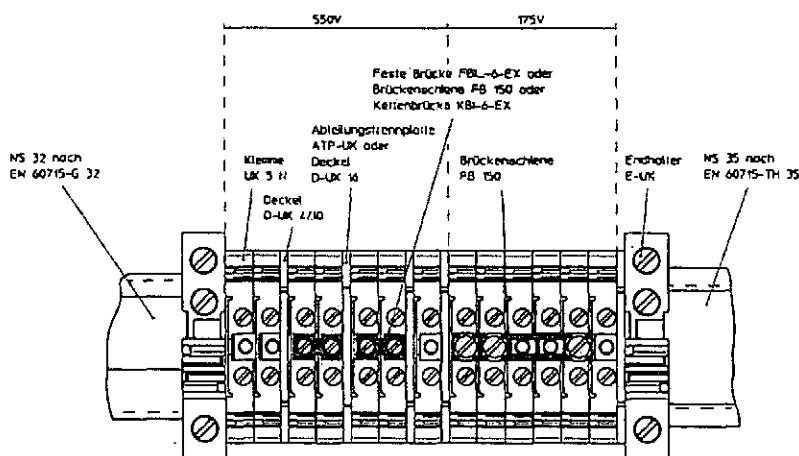
Accessories	Description	Order No.	
Cover	D-UK 4/10	3003020	
Cover	D-UK 16	3006027	
Partition plate	ATP-UK	3003224	
Fixed bridge	FBI 10-6-EX	0203519	Max. 37 A acc. to EN 50019
Chain bridge	KBI-6-EX	0711849	Max. 37 A acc. to EN 50019
Bridge rail	FB 150	0201595	Max. 27 A acc. to EN 50019

Important assembly instructions – increased safety "e"

When adding other series and sizes of terminal blocks and using additional accessories, the required air and creepage distances have to be observed.

If fixed bridges and chain bridges are used, a cover is necessary between bridges which make direct contact, as well as at the beginning and end of each bridge, in order to maintain the insulation distances.

If the fixed bridges are used for creating bridging between non-adjacent terminals, the max. working voltage is reduced to 175 V.

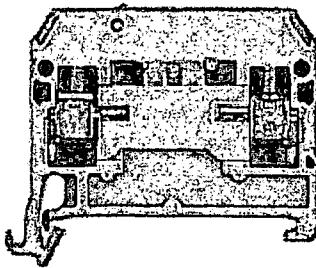


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**General ordering data**

Order No.	0172160000
Short text for material	SAKR/35
EAN	4008190030445
Qty	100

Product notes

Note, ordering data	SAKR/35 2 StB order No. 0183360000
Note, technical data	Tightening torque for the test sockets 0.5 -0.7 Nm

Additional technical data

Type of connection	screwed
No. of identical terminals	1
Version	Disconnect terminal
Type of mounting	clipped
UL 94 flammability rating of insulation material	V2
Installation advice	TS 35
Colour of insulating material	beige
Insulating material	PA 66
Open sides	right
Operating temperature range	- 50 °C, + 100 °C
Connection direction	on side
Product range	SAK Series
No. of levels	1
Levels cross-connected internally	No
No. of terminal strips per level	2
End plate required	Yes

CSA rating data

Max. cross-section (CSA)	AWG 12
Min. cross-section (CSA)	AWG 22
Voltage CSA	300 V
CSA current	10 A

Conductors for clamping (rated connection)

Stripping length	8 mm
Type of connection	Screw connection

No. of connections	2
Torque level with DMS electric screwdriver	2
Tightening torque range	0.5...1.0 Nm
Solid, max.	4 mm ²
Flexible, max.	4 mm ²
flexible w. ferrule AEH, max. DIN 46228-1	2.5 mm ²
flexible w. ferrule AEH, min. DIN 46228-1	0.5 mm ²
Clamping range, max.	4 mm ²
Clamping range, min.	0.13 mm ²
Clamping screw	M 3
Blade size	0.6 x 3.5 mm
Gauge to IEC 60947-1	A3
AWG conductor size, max.	3.31 mm ²
AWG conductor size, max.	AWG 12
Stranded, max.	4 mm ²
Stranded, min.	1.5 mm ²
AWG conductor size, min.	0.13 mm ²
AWG conductor size, min.	AWG 26
Connection direction	on side
Flexible, min.	0.5 mm ²
2nd type of connection	screwed
Solid, min.	0.5 mm ²
Twin wire-end ferrule, min.	0.50 mm ²
Zwillings-AEH, max.	1.50 mm ²

Dimensions

Width	6.5 mm
Height of lowest version	40.5 mm
Length	42 mm
TS 32 offset	4 mm

Disconnect terminals

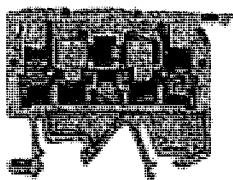
Torque level with DMS electric screwdriver	2
Slitting	pivoting
Integral test socket	No

EN 60079-7 rating data

Current Ex e	10 A
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Rating data

Rated cross-section	4 mm ²
Rated voltage	400 V
Rated impulse withstand voltage	6 kV
Rated current	10 A

**General ordering data**

Order No.	0474560000
Short text for material	ASK 1/EN
EAN	4008190020880
Qty	100

Product notes

Note, technical data	The rated cross-section is reduced to max. 2.5 mm ² when using cross-connection bridges.
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Additional technical data

Type of connection	screwed
No. of identical terminals	1
Version	Fuse terminal
Type of mouting	clipped
UL 94 flammability rating of insulation material	V2
Installation advice	TS 35 + TS 32
Colour of insulating material	beige
Insulating material	PA 66
Open sides	right
Operating temperature range	- 50 °C, + 100 °C
Connection direction	on side
Product range	SAK Series
No. of levels	1
Levels cross-connected internally	No
No. of terminal strips per level	2
End plate required	Yes

CSA rating data

Max. cross-section (CSA)	AWG 12
Min. cross-section (CSA)	AWG 26
Voltage CSA	300 V
CSA current	6.3 A

Conductors for clamping (rated connection)

Stripping length	9 mm
Type of connection	Screw connection
No. of connections	2
Torque level with DMS electric screwdriver	2

Tightening torque range	0.6...0.8 Nm
Solid, max.	4 mm ²
Flexible, max.	4 mm ²
flexible w. ferrule AEH, max. DIN 46228-1	4 mm ²
Flexible, max., ferrule with plastic collar (DIN 46228 pt 4)	2.5 mm ²
flexible w. ferrule AEH, min. DIN 46228-1	0.5 mm ²
Flexible, min., ferrule with plastic collar (DIN 46228 pt 4)	0.5 mm ²
Clamping range, max.	4 mm ²
Clamping range, min.	0.13 mm ²
Clamping screw	M 3
Blade size	0.6 x 3.5 mm
Gauge to IEC 60947-1	A3
AWG conductor size, max.	3.31 mm ²
AWG conductor size, max.	AWG 12
Stranded, max.	4 mm ²
Stranded, min.	0.5 mm ²
AWG conductor size, min.	0.13 mm ²
AWG conductor size, min.	AWG 26
Connection direction	on side
Flexible, min.	0.5 mm ²
2nd type of connection	screwed
Solid, min.	0.5 mm ²
Twin wire-end ferrule, min.	0.50 mm ²
Zwillings-AEH, max.	1.50 mm ²
Dimensions	
Width	8 mm
Height of lowest version	34 mm
Length	58 mm
TS 32 offset	11 mm
TS 35 offset	9 mm
Disconnect terminals	
Torque level with DMS electric screwdriver	2
Display element	
Type of voltage for indicator	AC/DC
Operating voltage for indicator, max.	500 V
Fuse terminals	
Display	without LED
Operating voltage, max.	500
Fuse holder (cartridge holder)	detachable