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IMMINGHAM STORAGE CO LTD

EAST TERMINAL

NO.7 SWITCHROOM (Ex NO.3 PUMPHOUSE)

SUPPORTING DESIGN DOCUMENTATION

Rev	Date	By	Checked	Approved	Description	Client Ref.
A	21.06.13	D. Smith	MM	MM	Original Issue	
						Document No. SI451002_MNL
						Page 1 of 4

IF NOT SIGNED THIS DOCUMENT IS UNCONTROLLED

Contents

1. Register Control System
2. No.7 Switchroom – Basis of Design
3. MCC
Basis of Design
MCC Tender
MCC Tender Appraisal
4. Installation Tenders



Section 1
Register Control System



Register Control System

<u>Register No</u>	<u>Description</u>	<u>Issue</u>
SI451001_REG	Report Register	A



CLIENT:
Immingham Storage Co Ltd
East Terminal

REV	DATE	BY	CHKD	APPD
A	21.06.13	DBF	MM	MM

CLIENT REF.

P & I REF.
SI451001_REG
SHT 1 OF 1

<u>Report No</u>	<u>Revision</u>	<u>Date</u>	<u>Description</u>
ISSUE	0 A B C D E		
SI451001_RPT	C	10.08.12	No.7 Switchroom Basis of Design
SI451003_RPT	A	07.08.12	Motor Control Centre Basis of Design
SI451004_RPT	A	07.08.12	Motor Control Centre Tender
SI451005_RPT	A	18.09.12	Motor Control Centre Tender Appraisal
SI451001_INS	A	15.02.12	Electrical Infrastructure Installation Tender
SI451002_INS	B	25.02.13	MCC Power Supply Installation Tender
SI451003_INS	A	22.02.13	Drive Transition to New MCC Installation
SI451004_INS	A	22.02.13	Electrical Infrastructure Installation Tender

Section 2

No.7 Switchroom



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IMMINGHAM STORAGE Co LTD

EAST TERMINAL

No.7 SWITCHROOM (Ex No.3 PUMP HOUSE)

BASIS OF DESIGN

Rev	Date	By	Checked	Approved	Description	Client Ref.
A	09.11.11	M. Morgan	DBF	MM	Issued for Approval	Document No. SI451001_RPT
B	01.02.12	M. Morgan	DBF	MM	Incorporating Client Comments	
C	10.08.12	M. Morgan	DBF	MM	Updated post Review Meeting	
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1 REVISION HISTORY

Rev	Description
A	Original Issue for Customer Review and Comment
B	Clients comments incorporated
C	Updated Post Review Meeting
D	

2 INTRODUCTION

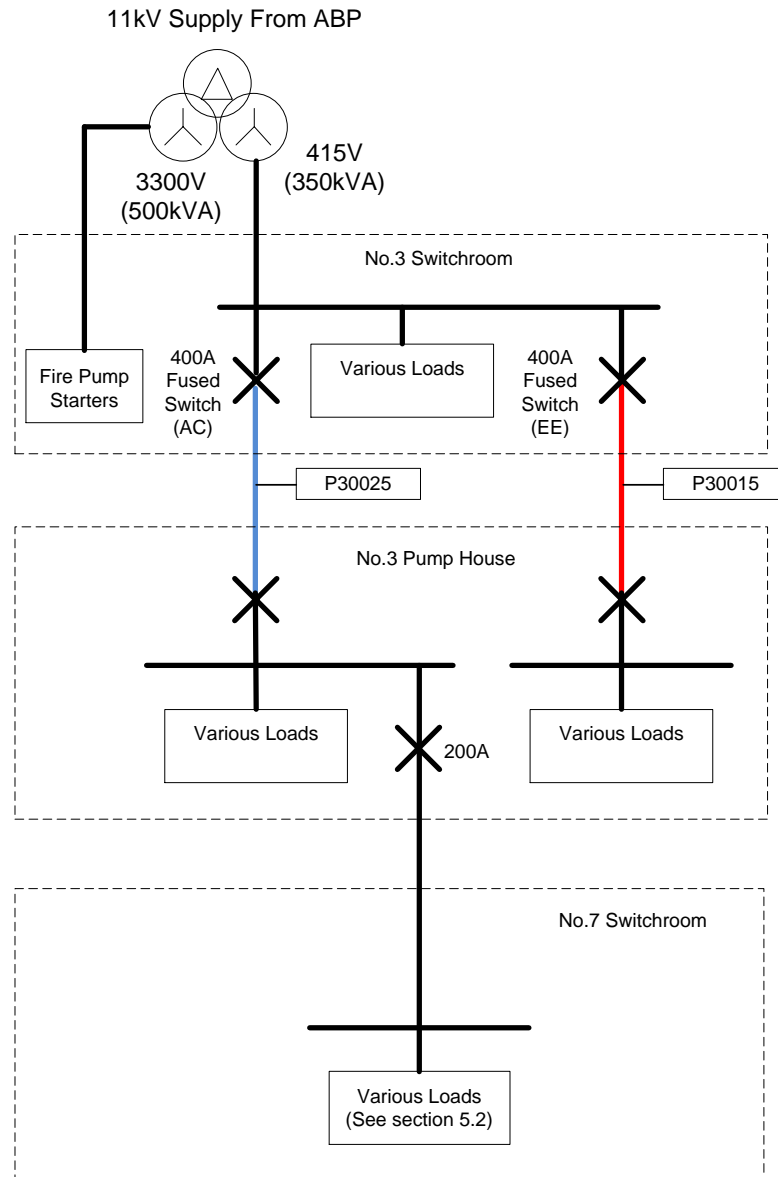
This report details the basis of design for conversion of a portion of No.3 Pumphouse into a switchroom. The new switchroom will be designated No.7 switchroom with the contents of the existing small No.7 Switchroom eventually being incorporated within this new switchroom.

The report was first developed to provide electrical infrastructure for a new effluent treatment facility, this work has now been completed and the report has been further revised to detail the next steps.



3 ORIGINAL INSTALLATION

An 11kV supply from ABP feeds an 11000/3300/415V transformer located in an outside location adjacent to the main office building. Information supplied indicates this to be rated at 850kVA (500kVA at 3300V plus 350kVA at 440V). The 3300V supply from the transformer feeds two fire pump starters located in No.3 Switchroom. The 415V supply feeds all LV supplies in No.3 Switchroom, No.3 Pump House and No.7 Switchroom as shown below.



It has not been possible to establish the maximum demand placed on the 415V supply from the transformer. It is known however that the combined load of No.3 switchroom, No.3 Pump House and No.7 switchroom does not exceed 460A i.e. the transformer rating. Given that there is a significant connected load in No.3 Switchroom it is also reasonable to deduce that even though there are two separate 400A feeds to No.3 Pump House, these two feeds combined do not exceed 400A in total.

4 MODIFICATIONS COMPLETED

The initial priority was to provide the Aquabio effluent treatment plant with an LV supply. This is now complete and has been achieved as follows. The diagram below shows the new configuration.

1. No.3 Pumphouse has been physically split into two sections. One end houses the air compressors and receivers and the other end forms the new No.7 switchroom. The compressor house end of the building still houses electrical switchgear, the removal of which is the subject of further works detailed in this document.
2. A new LV switchboard has been installed in No.7 switchroom
3. The Aquabio MCC/Switchboard has been installed in No.7 switchroom
4. Cable P30015 has been disconnected from LV board in No.3 pumphouse (fed from fused switch EE), extended and now forms the incoming supply to the new LV switchboard in No.7 switchroom.
5. The LV switchboard, previously fed by cable P30015, has been re-supplied from a 400A MCCB at the new LV switchboard in No.7 switchroom.
6. The Aquabio MCC/Switchboard has been supplied from a 630A MCCB at the new LV switchboard in No.7 switchroom.
7. Cable P30025 (fed from fused switch AC) has been retained feeding the existing LV switchboard in No.7 switchroom.

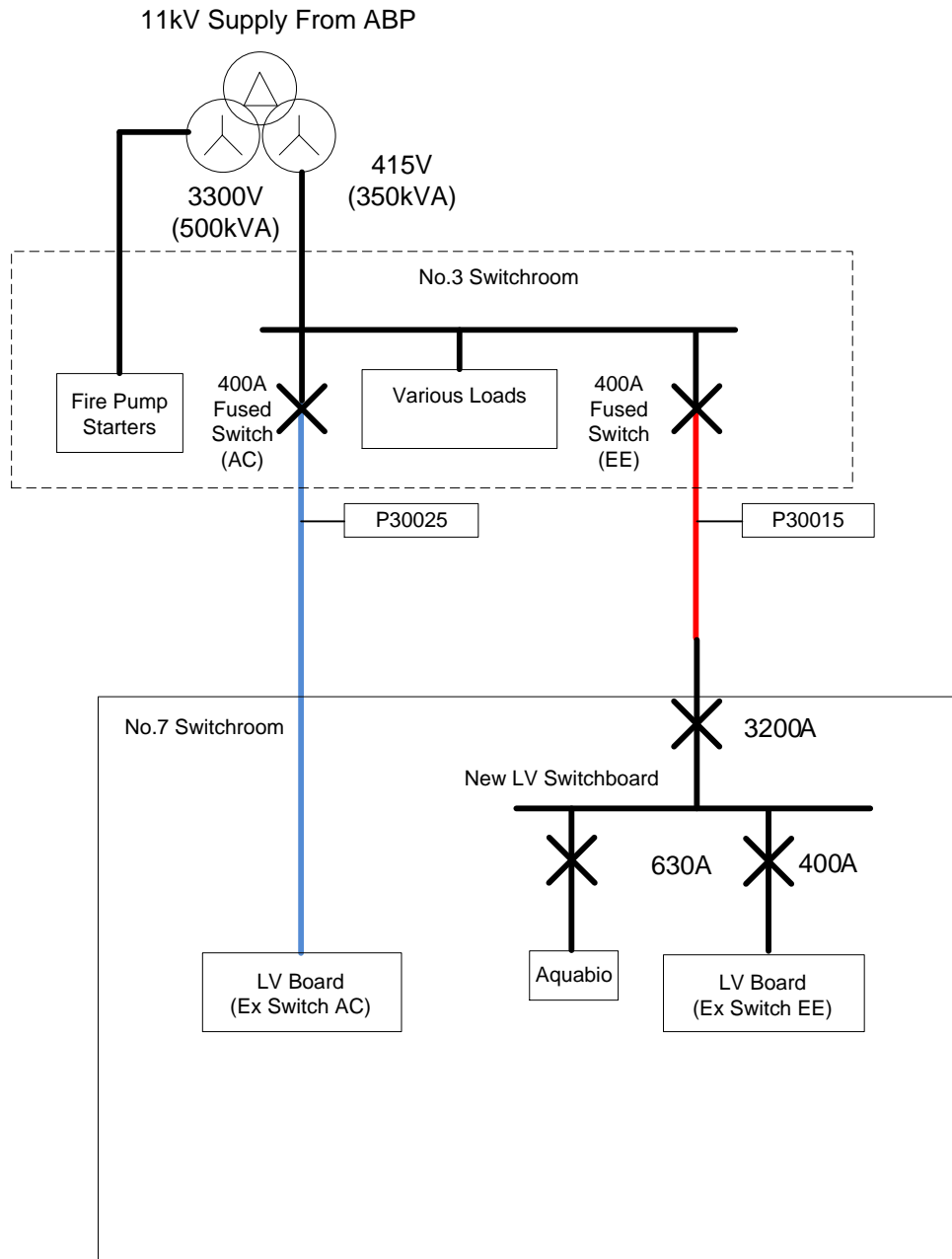
The Aquabio effluent treatment facility has a connected load of 240kW (415A), which after diversity has been applied for duty/standby pumps reduces to 213kW (370A). For the purpose of this document a normal running current of 250A has been assumed based on operating experience from the similar facility at ISCo West.

It is recognised that this is a short term solution. The transformer is of limited 415V capacity and this solution may impose operational restrictions on the simultaneous use of connected loads (refer to Load Schedule in section 7). This solution does however make provision for incorporation into a more robust structure as funds permit and as outlined in subsequent sections.

Notes

1. It was originally planned to disconnect and retire cable P30025 feeding the LV board in the northern end of No.3 pumphouse and re-supply the board from a 400A MCCB at the LV switchboard. A decision was taken not to implement this in order to retain some diversity of supply from No.3 switchroom.





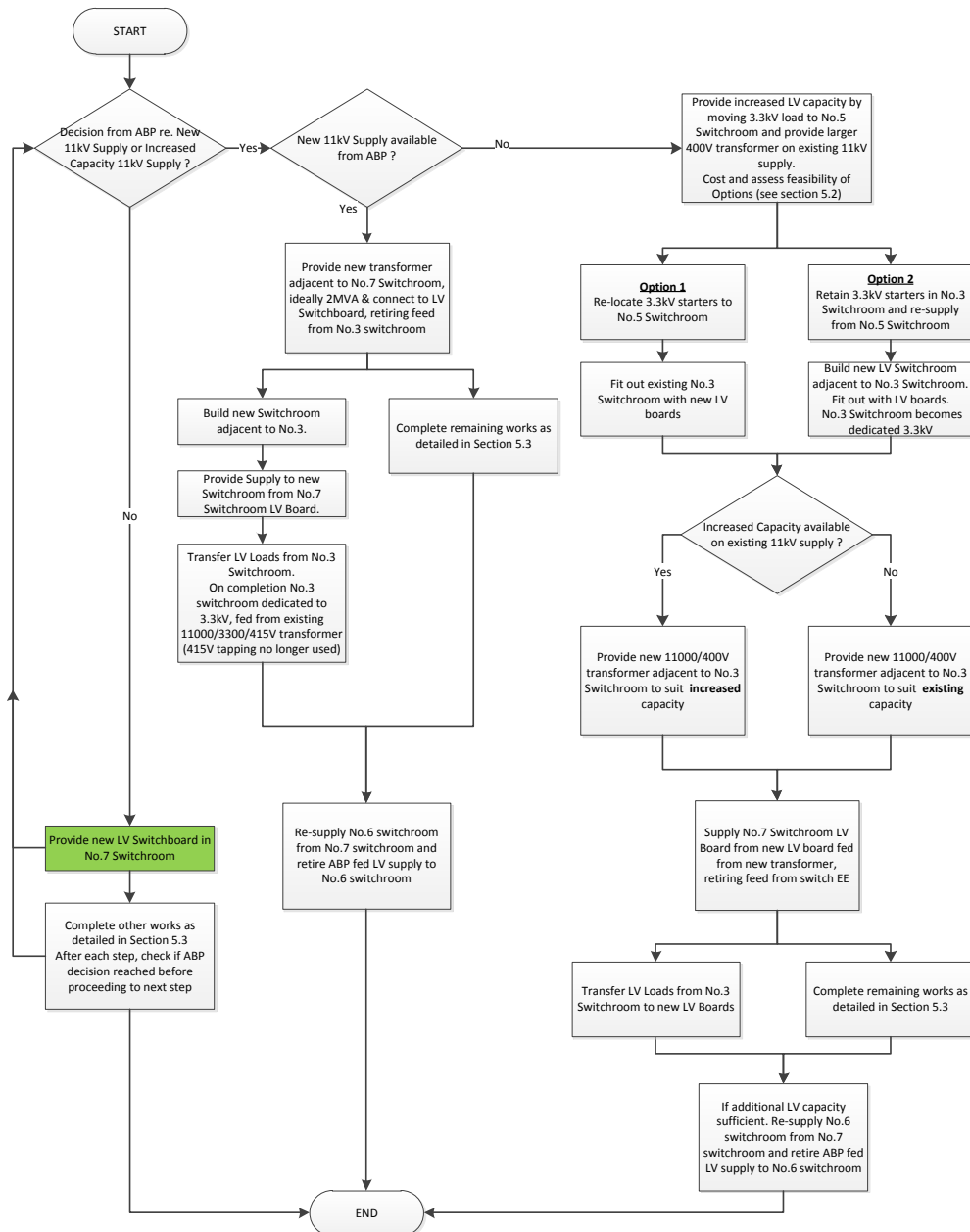
Current Configuration after initial modifications
 (Note : Unused switches on new LV switchboard not shown for clarity)



5 FURTHER PROPOSALS

It would be desirable to improve the LV capacity to No.7 switchroom. Several options are available but the decision as to which option is taken depends on a number of factors, therefore so far as initial phases of work are concerned it is important that the proposals do not prohibit any of the future options and do not require extensive retrospective work that would be wasteful financially.

From the flowchart below, showing the decision making process, it can be seen that the key decisions rely on a response from ABP as to the availability and capacity of HV supplies. It can also be seen that certain tasks are common regardless of the response from ABP, an example being the work performed to date in providing a new LV switchboard in No.7 Switchroom (highlighted green).



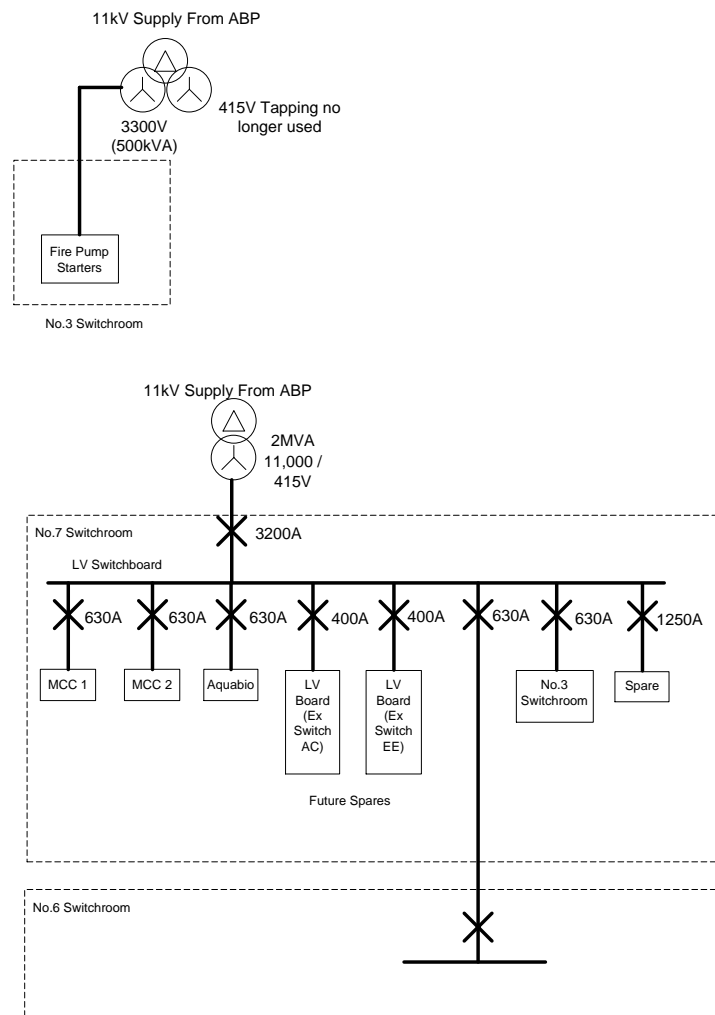
5.1 New ABP 11kV Supply (No.7) – Retain ABP Supply to No.3 (3.3kV)

An option is to obtain a new 11kV supply to the terminal. This would be sited adjacent to No.7 Switchroom and supply the LV board within. LV supplies would be distributed from this point to No.3 and No.6 switchrooms, replacing LV supplies at those locations.

If this option became available the order of proposed works is as follows.

1. Provide new 11000/400V transformer at No.7 Switchroom. LV board is capable of accepting up to 2MVA transformer.
2. Build a new LV switchroom adjacent to existing No.3 switchroom and supply this from No.7 Switchroom LV Board
3. Transfer loads from existing No.3 switchroom to new switchroom. On completion the existing No.3 switchroom becomes a dedicated 3.3kV switchroom.

A single line diagram is shown below for this solution.



5.2 New ABP 11kV Supply not Available

If a new 11kV supply is not available from ABP, there are two scenarios

1. The existing 11kV supply cannot be uprated
2. The existing 11kV supply capacity can be increased

In either scenario, the desire is to increase the LV capacity available at No.7 switchroom. The first step is to transfer the 3.3kV load from the existing transformer at No.3 switchroom to the transformer at No.5 switchroom. This can be achieved by

- a. Relocating the 3.3kV starters to No.5 switchroom 3.3kV Switchboard
- b. Re-supplying the 3.3kV starters in their current location from 3.3kV Board in No.5 Switchroom

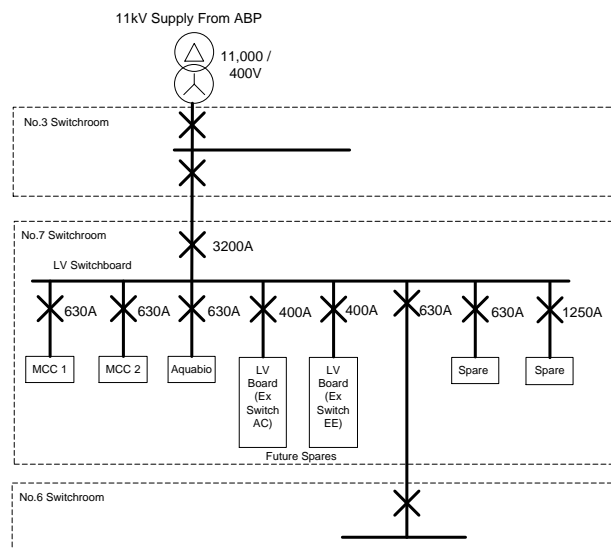
The costs involved include :

- Option (a) includes switchboard modifications and pump re-cabling, but the existing No.3 Switchroom can then be used to house new LV switchboards.
- Option (b) would require a new LV switchroom to be built adjacent to No.3 Switchroom, in addition to switchboard modifications and cabling requirements. These two options will require costing in their entirety to permit a decision to be made.

When the 3.3kV load has been removed from the existing 11kV supply then a new 11000/400V transformer can be installed, either

1. Sized to utilise the existing 11kV capacity, thus increasing the LV capacity in the system (from 350kVA to 850kVA) due to the 11kV supply no longer also supporting the 3.3kV load.
2. Sized to utilise any increased 11kV capacity made available by ABP. (>850kVA)

In both cases the new transformer would supply an LV board for onward distribution to No.7 Switchroom. A single line diagram below shows this solution. Note : The decision to re-supply No.6 switchroom is discussed in section 5.4.



5.3 Modifications not Reliant on ABP Decision

1. Provide new MCC in No.7 Switchroom to replace Board fed from Switch EE i.e. the board which is located in the compressor house end of the building. This will enable this old board to be retired.
2. Provide new MCC in No.7 Switchroom to replace Board fed from Switch AC. This will enable this old board to be retired.
3. Incorporate old No.7 Switchroom drives into new MCC and retire old No.7 switchroom

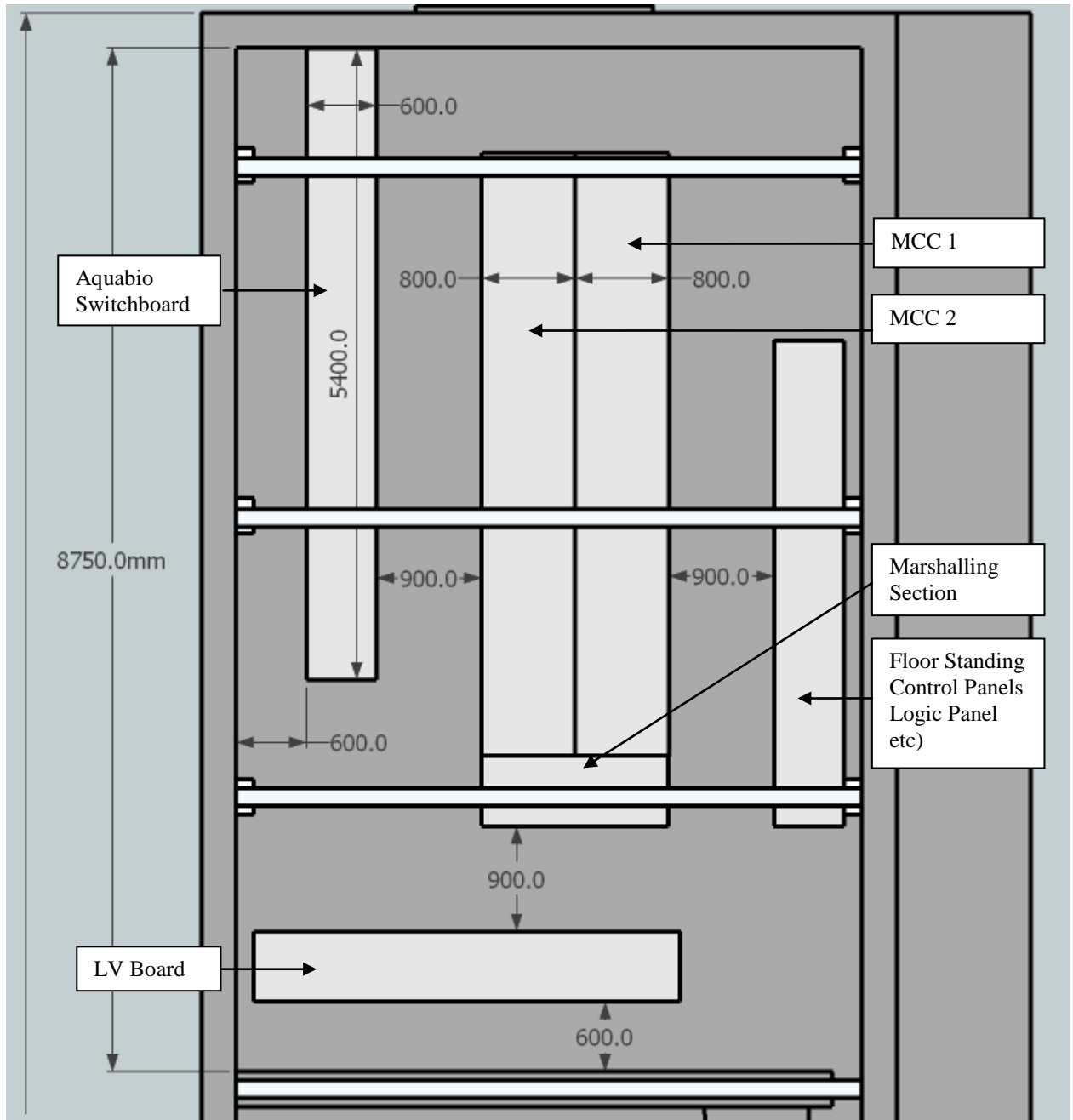
5.4 No.6 Switchroom

No.6 Switchroom is currently fed at 415V and limited to 200A capacity. This supply is known to have a poor earth loop impedance value which impacts on electrical designs in this switchroom. If a new 11kV supply becomes available from ABP (section 5.1) then No.6 switchroom would be re-supplied from No.7 switchroom and the ABP 415V supply retired. If a new supply is not available then the decision to re-supply No.6 from No.7 would be deferred until the new capacity and usage was fully understood.



6 PROPOSED SWITCHROOM LAYOUT

The LV switchboard has been shown together with reserved space for a future ‘back to back’ MCC expansion and space for a suite of general purpose floor standing control panels. Extensive internal cable racking will be included which will provide for all foreseeable expansion.



Plan View with Racking Removed

Notes

- 900mm. space allowed for walkway all round
- MCC's would be to the necessary width and extendable towards the double doors



7 LOAD SCHEDULE

The drive sizes quoted are from a site survey by Ian Stark and have not been further verified at this time. A survey of the existing switchboards has however been conducted.

Several installed loads have been noted as redundant and have therefore been excluded from the load schedule. It is to be confirmed by IScO that this is correct. The redundant loads are :-

1. P3-18 (90kW)
2. Phosphoric Acid trace heating T909/T910
3. Full load currents are from generic tables and have not been confirmed from motor rating plates

7.1 Loads Fed from 400A switch EE at No.3 Switchroom

Tag	Size (kW)	Starting Method	Full Load (A)	Duty	Drawing	Notes
P3-10	90	TBC	160			
P3-11	18.5	TBC	35			
P3-13	100	TBC	173			
P3-16	45	TBC	83			
P3-29	TBC	TBC	TBC			
P3-36	18.5	TBC	35			
C3-31	75		100			Air Compressor (fed from 100A MCCB therefore max running current assumed to be 100A)

7.2 Loads Fed from 400A switch AC at No.3 Switchroom

Tag	Size (kW)	Starting Method	Full Load (A)	Duty	Drawing	Notes
P3-8	90	TBC	160			
P3-9	90	TBC	160			
P3-14	45	TBC	83			
C3-32	75		100			Air Compressor (fed from 100A MCCB therefore max running current assumed to be 100A)
				Jetty Derrick DB		200A MCCB – actual load TBC
				No.3 Pump House DB1		
				No.3 Pump House DB2		Site Lighting ?
P9-1	22	TBC	41			No.7 Switchroom Drives fed from a 200A supply in No.3 Pump House
P9-2	22	TBC	41			
P9-3	22	TBC	41			
P9-9	37	TBC	69			
P9-11	37	TBC	69			



Section 3

MCC



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IMMINGHAM STORAGE Co LTD

EAST TERMINAL

No.3 PUMP HOUSE

MOTOR CONTROL CENTRE

BASIS OF DESIGN

Rev	Date	By	Checked	Approved	Description	Client Ref.
A	07.08.12	M. Morgan	DBF	MM	Issued for Approval	
						Document No. SI451003_RPT
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1 REVISION HISTORY

Rev	Description
A	Original Issue for Approval
B	
C	
D	

2 INTRODUCTION

A project has been undertaken to convert No.3 Pump House into two distinct sections. A plant room to house existing air compressors, dryer / receiver and a switchroom separated by an internal wall.

This report details the basis of design for the Motor Control Centre (MCC) for the switchroom. Referring to the overall switchroom basis of design document (SI451001_RPT), two MCCs are proposed, although it is likely these will be installed one at a time.

A typical soft start circuit drawing has been produced and is appended to this document (SI451001_DWG). Fully detailed individual circuit drawings, both soft start and DOL will be produced for construction.

3 FUNCTIONAL DESCRIPTION

This description incorporates a philosophy as discussed at ISCo East on 2nd May 2012. Present at that meeting were.

Andy Rhodes
Steve Waterman
Alan Hall
Ian Stark
Martin Morgan

3.1 Basic Requirements

The MCC(s) will be designed and constructed in such a manner that they are modular in nature and thus provide a consistent interface to the end user regardless of the degree of complexity for the particular drive. The following basic criteria will be applied.

Construction Floor mounted, Back to Back, Front entry only, top entry only for cables

Drive Starting Direct On-Line Starting for Drives < 15kW
Soft Start for Drives ≥15kW



Controls Voltage 24Vdc. A central control transformer will be provided in each MCC and 24Vdc individually fused and distributed from here to each drive compartment

Short Circuit Protection

It is noted that the site preference is to use MCCBs. The circuit currently shows fuse protection. Calculations will have to be performed prior to construction issue drawings being issued to verify earth fault clearance times are satisfied using MCCBs with the cables currently installed.

The MCC circuit design is generic. Any interfacing with a control system, for example with a road loading batching system, will be dealt with in a logic panel co-located in the same switchroom. This is likely to culminate in a single permissive contact wired from the logic panel to the MCC compartment. This design enables the MCC circuit design to always be the same and thus familiar to the user.

A marshalling section will be provided, thus all field control wiring will be diverted to the marshalling section from where it will be internally wired through the MCC. This again permits a standard circuit design to be utilised.

3.2 MCC Operator Interface

- Compartment door mounted controls :-
 - Start (momentary pushbutton)
 - Stop (Red mushroom head stayput pushbutton)
 - Auto / Off / Manual control mode selector switch
- Compartment door mounted lamps for :-
 - Running (Green)
 - Stopped (Red)
 - Fault (Amber) : Fault = Soft Start Fault, Overload or Field mounted stop button pressed
 - Low Suction Level (Amber)
 - High Discharge Temperature (Amber)
- Door mounted overload reset button
 - Soft Start – via door mounted operator panel
 - DOL – via door mounted button
- Power Indication
 - Drives $\geq 37\text{kW}$ to have multi-function power meter. Meter to have the ability for Modbus output for connection if desired to PLC/SCADA for remote monitoring, trending and reporting
 - Drives $< 37\text{kW}$ to have door mounted ammeter
 - All the above to be via current transformers
- Compartment door fan and filtered inlet for all soft start drives



3.3 Control Features

The following facilities will be provided

- Start / Stop at MCC
- Start / Stop / Run indication from remote location(s)
- External permissive (stop), which will include crash stop and may include other permissives such as an earth proving system or a batch controller permissive.
- Thermistor trip for motor over temperature protection.
 - In the case of soft starts this will be a direct input to the soft starter
 - For DOL starters a thermistor relay will be incorporated
- Pump product over temperature protection.
- Pump dry run protection including override timers to permit starting under dry conditions and time delayed stop if dry running is detected.
- Maximum Run Timer
- PLC/SCADA interface signals for drive status and auto start.

3.4 Functional Description

3.4.1 Normal Start / Stop

The drive control can be set to three modes at the MCC. Auto / Off / Manual

- In AUTO mode, the drive is started and stopped by a remote control system e.g. PLC/SCADA via Relay R39. The drive will run, providing all interlock conditions are satisfied, whilst R39 is energised and will stop when R39 de-energises. All interlocks (see section 3.4.2) are active and all manual stop buttons are operational in Auto mode.
- In OFF mode control power is interrupted, the drive will stop if running and the drive cannot be started either using manual start buttons or the auto start relay R39.
- In MANUAL mode, providing all interlocks are satisfied, the drive can be started using the momentary start button at the MCC and at any remote manual start buttons if fitted. All interlocks (see section x.x) are active and all manual stop buttons are operational in Manual mode.

3.4.2 Interlocks

The drive will stop regardless of control mode selected (Auto / Manual), if any of the following conditions are detected.

- Any manual stop button operated
- Crash Stop operated (Zone relevant to location of drive / point of use)
- External permissive removed
- Thermal Overload (manual reset required)
- Low Suction level (see section 3.4.3)
- High Discharge Temperature
- Max Run Time exceeded (see section 3.4.4)



3.4.3 Low Suction Level

A liquid detection probe is installed in the pump suction pipework in order to prove the presence of liquid and avoid the pump running under dry conditions. It can be the case however, due to the nature of the company's business, that the pump will be exposed to dry suction conditions from time to time due to pipe clearing / tank stripping operations etc. Override timers are therefore provided to permit short duration dry running if desired. The control circuit functionality is as follows.

Start Up Override

The probe status is overridden for an adjustable time period after drive energisation via timer R16T. Once the timer elapses the probe must be covered otherwise the drive will be stopped.

Running Override

The probe must be uncovered for a time period (adjustable) before the drive is stopped. This override is provided by R22T

Note : The generic circuit design is based on Exde liquiphant probes. Any variations to this will be dealt with on an individual basis.

3.4.4 Max Run Timer

This feature has been included based on a request at ISCo West. The timer permits the drive to run for a maximum period before stopping. This feature is primarily aimed at manually started and stopped road loading pumps to prevent them being left running against a dead head at the end of a batch particularly when the pump is remotely located from the loading point. The timer (R19T) would be set beyond the normal loading period.

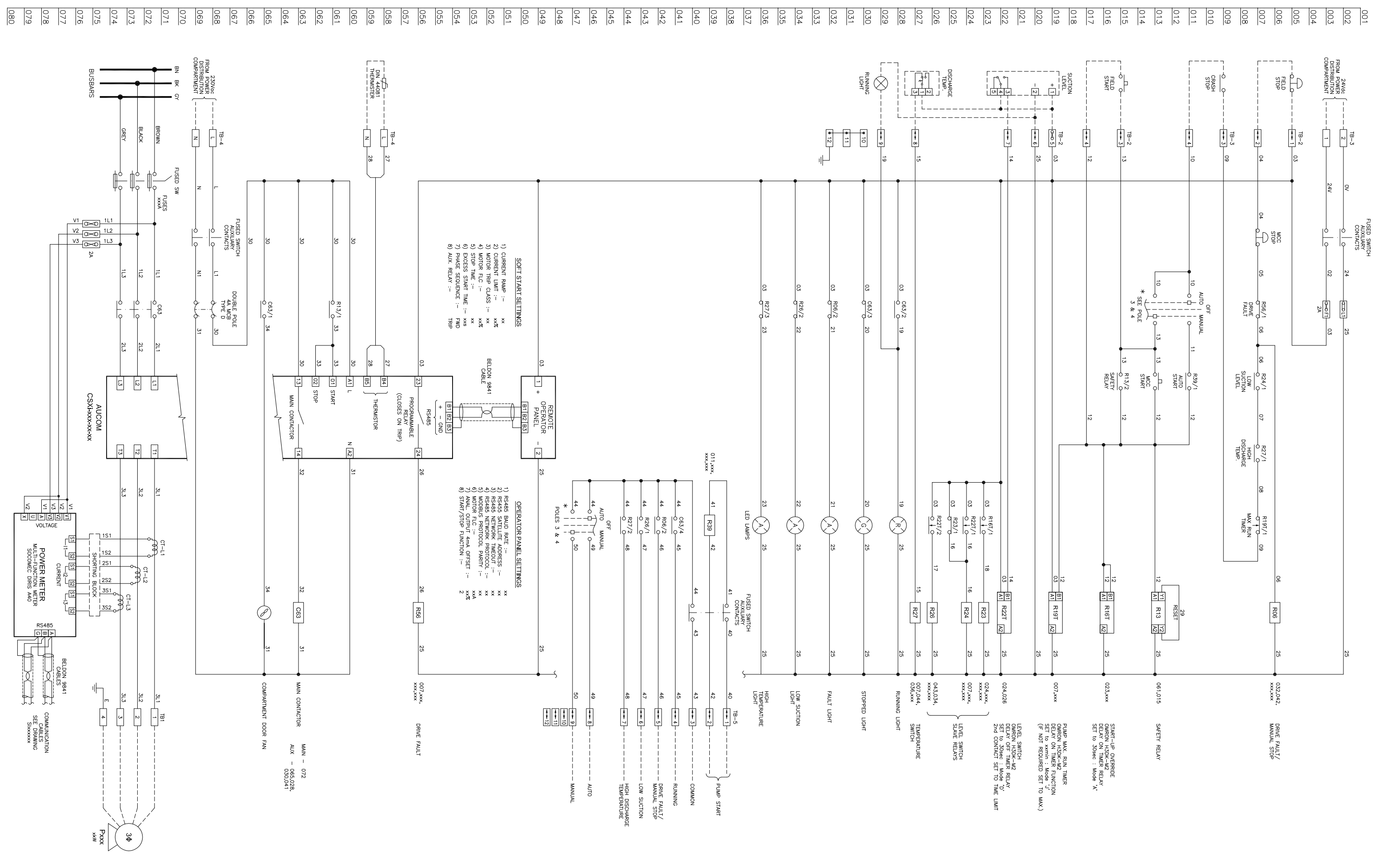
If the feature is not required for a particular drive the timer can be set to Max. adjustable setting or deleted from the circuit.



Appendix I

Typical Soft Start Circuit Drawing – SI451001_DWG





CABLE:

3Φ - PHASE COLOURS
230Vac - BROWN
NEUTRAL - BLUE
24Vdc CONTROL - WHITE
0Vdc CONTROL - BLACK

SIZE:

TO SUIT MOTOR LOAD

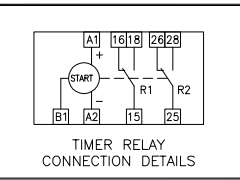
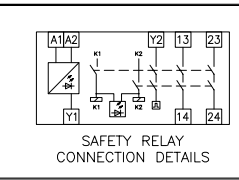
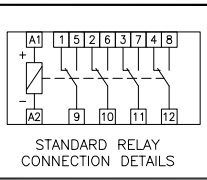
1.5mm²
1.5mm²
1.0mm²
1.0mm²

TERMINALS:

TB1 - TO SUIT OUTCOMING TAILS
TB2 - Weidmuller WS16 & WTR2.5
TB3 - Weidmuller WTR2.5
TB4 - Weidmuller WDU2.5 Shrouded
TB5 - Weidmuller WTR2.5
TB6 - Weidmuller WTR2.5
TB7 - Weidmuller WDU2.5

RELAYS:

- 1) STANDARD RELAY with TEST BUTTON, LED, DIODE & MECHANICAL INDICATOR :- FINDER TYPE 55.34.9.024.0.0094
- 2) TIMER RELAY :- OMRON H3DK-M2



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REV	DATE	BY	DRN	CHK'D	APP'D	DESCRIPTION
A	07/08/12	P.P.	P.P.	M.M.	M.M.	ISSUED FOR APPROVAL

PLANT	IMMINGHAM STORAGE Co. - EAST TERMINAL
TITLE	No.3 PUMPHOUSE GENERIC SOFT START MOTOR COMPARTMENT WIRING DETAILS
CLIENT DRG. No.	P&I DRG No. SI451001_DWG

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SIMON STORAGE
IMMINGHAM EAST TERMINAL
No.7 SWITCHROOM
MOTOR CONTROL CENTRE
TENDER

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	SI451002_DWG	Typical DOL Circuit Drawing
	SI451005_DWG	Marshalling Panel Layout Drawing
	SI451006_DWG	Compartment Door Layout Drawing
	SI451008_DWG	Control Power Wiring Drawing
	SI451009_DWG	Crash Stop Wiring Drawing



1 INSTRUCTIONS TO TENDERERS

1.1 Introduction

This document details the requirements for two motor control centres and associated marshalling cubicle for a new switchroom at Immingham Storage Co., East terminal. The switchroom has been created by splitting the existing No.3 Pumphouse into two sections, one housing existing air compressors etc. and the other to form a new switchroom to be known as No.7 Switchroom. The existing No.7 switchroom will be incorporated into this new switchroom and then be retired.

It is to be read in conjunction with all referenced and attached documentation.

The Tender shall be in respect of the proposed works and shall be completed and submitted strictly in accordance with these instructions to tenderers.

1.2 Date, Time and Mode of Delivery

The completed tender packages together with any covering letter and with the remainder of the containing document all in originally bound form (taking account of additions/omissions, etc., notified in writing during the tender period) together with other requirements, shall be submitted by the time stated in the purchaser's letter of invitation to tender.

The envelope must not be marked nor delivered in any way which might disclose the identity of the tenderer.

1.3 Alterations of Tender Documents

No authorised alteration shall be made in the Tender or the accompanying documents.

1.4 Enquiries to be Made Concerning the Tender

Any query in connection with the tender shall be submitted to:-

Martin Morgan mm@pidesign.co.uk
or Dave Faulkner df@pidesign.co.uk
P & I Design Limited
2 Reed Street
Gladstone Industrial Estate
Thornaby.
Tel: (01642) 617444
Fax: (01642) 616447



1.5 Sufficiency of Tender

Before submitting a tender the tenderer should obtain all information, familiarise himself with means of access, location, extent and nature of the site, extent and nature of the services to be provided, conditions under which the services and works will be carried out, conditions affecting supply of staff and labour and any other matters which may affect his tender. applications for costs etc. on the ground of lack of knowledge in any respect of the aforementioned will be refused.

1.6 Confidentiality

The particulars of this document and any tender submitted in respect hereof are private and confidential and shall not be used for any purpose other than the proposed contract. In the event of a tender not being submitted or accepted all documents and drawings shall be returned to the person named in Clause 4 of these instructions to tenderers.

1.7 Contravention of Tender Requirements

Contravention of any of the requirements of these instructions to tenderers with regard to tendering shall render any tender concerned liable to disqualification at the sole discretion of Simon Storage Ltd.

1.8 Contract Agreement

The contractor shall, when called upon, enter into and execute a contract agreement.

1.9 Information to be Supplied by the Purchaser

In addition to the information to be provided by the purchaser prior to the contract award the tenderer shall attach a schedule of any further information which may be required from the purchaser, together with a programme indicating when it will be required.

1.10 Tender Price

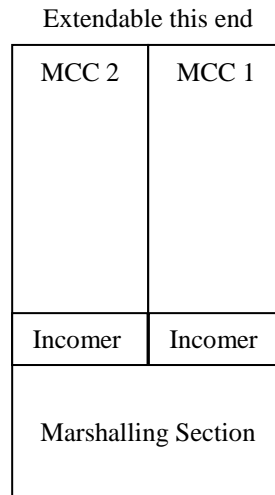
The contractor shall make his tender open for acceptance for a period of one month from date of receipt by the Purchaser.



2 SCOPE OF WORK

2.1 MCC

Two motor control centres, individually fed but installed back to back are required. A marshalling cubicle shall be provided to be positioned across the ends of the two MCC's to accept control wiring from each compartment installed as internal panel wiring. The layout is shown below in plan view.



Notes

1. The maximum space available (length) including marshalling panel is approximately 5600mm. The drive list in section 4 shows the allocation of drives to each MCC. This is based on current division of drives between boards and may be flexible if required to achieve maximum board length. Manufacturer to identify changes in drive allocation with tender if necessary.
2. The tender is to cover two MCCs and a marshalling section. An order may be placed for one or both MCCs and these orders may not necessarily be placed simultaneously. The tender pricing section shall be split accordingly, with site works self contained for each section of work. It is likely the orders would be split as follows.
 - a) MCC1 and marshalling section
 - b) MCC2

2.1.1 Drives

In producing a tender, the following key requirements shall be incorporated.

- 1) All drive compartments to have lockable door isolators such that individual compartments can be worked on without necessitating a full board shutdown. This shall apply also to any spare compartments that are not fitted out with control hardware. In this case, a split backplate shall be utilised so the compartment can be isolated via the door isolator whilst the remaining backplate is withdrawn and furnished.
- 2) Compartment internal layout and door front layout for all DOL compartments shall be consistent. Compartment internal layout and door front layout for all soft starters shall be consistent.



- 3) Drives $\geq 15\text{kW}$ shall be soft start. Appropriately sized Soft Starters from the Aucom CSXi range shall be used. Remote operator panels shall be mounted on the compartment door.
- 4) Drives $< 15\text{kW}$ shall be Direct On Line
- 5) All DOL compartments shall be capable of upgrading to 11kW with the minimum of disruption, regardless of currently installed drive size i.e. :-
 - a. Power cabling including busbar tails shall be sized for 11kW drive throughout
 - b. Door isolator shall be rated at 63A regardless of currently installed drive size.
 - c. Fused Switch (where applicable) shall be rated at 63A regardless of currently installed drive size. Appropriately sized fuses shall be specified with construction issue drawings.
- 6) Soft Start compartments $\leq 55\text{kW}$ shall be capable of upgrading to 55kW with the minimum of disruption, regardless of currently installed drive size i.e. :-
 - a. Power cabling including busbar tails shall be sized for 55kW drive throughout
- 7) Fuse switches (where installed) shall always be capable of taking one size larger current rated fuse than that specified for a particular drive.
- 8) In laying out compartments, due regard shall be given to installation of cabling and general maintainability i.e. spacing and access of components, sufficient space to install and terminate field power cables, noting that these are likely to be significantly larger than the internal power cables. As noted under the documentation requirements section of this tender, internal compartment layout drawings shall be submitted for approval prior to construction commencing.

2.1.2 Spare Compartments

The tender shall specify how many spare compartments can be achieved within the steelwork required for the drives specified.

2.1.3 Crash Stop Compartment

A dedicated compartment shall be provided for crash stop controls in each MCC. Internal panel wiring shall be taken from this compartment to each individual drive compartment.

2.1.4 Control Power Compartment

A 230Vac / 24Vdc control power section shall be provided in each MCC, this will include

- 24Vdc 20A power supply
- 30 way 24V dc fused power distribution
- 415V/240V control transformer with 30 way 240V fused power distribution
- Internal panel wiring shall be taken from this compartment to each individual drive compartment.



2.2 Marshalling Section

The marshalling section shall be constructed to the same mechanical design and finish as the main boards. The section shall have wardrobe style doors and the internal components will be common to MCC1 and MCC2.

Each compartment shall have control wiring internally wired to a set of terminals arranged in compartment order as shown on the typical circuit drawings. The marshalling section shall be split into MCC1 and MCC2 sections allowing space for future compartment wiring.

2.3 Manufacturers Documentation

Typical general arrangement drawings have been included with this tender document. These are indicative only and the manufacturer is to include a drawing showing proposed compartment layout and overall dimensions with tender based on their selected steelwork.

2.4 Programme

The selected tenderer will be required to produce and submit the following documentation as a minimum within two weeks of order placement. These will be approved by the client prior to manufacture commencing within one week of submission.

- Dimensioned General Arrangement drawing
- Door layout drawings
- Internal compartment layout drawings

The tender shall indicate the following key dates

2.5 Testing

The price is to include for witnessed testing at the manufacturers factory. The MCC's shall be tested as a fully assembled unit prior to breaking into shipping sections.

The price shall include for re-assembly on site in the final location and all necessary re-tests.

The manufacturer shall offer a day rate for attendance during functional testing after establishment of incoming supply (by others)

Test records are to be provided.

2.6 Installation

The price is to include for labour and materials to deliver, offload, move and re-build panels in final position. A switchroom layout drawing is attached for reference, but the manufacturer shall satisfy themselves of all requirements in accordance with section 1.5

Note : Please note new site safety regulations require that Safety Passport qualification is required for all personnel and Safety Passport Supervisor qualification and permit acceptors induction is required. Please contact site safety officer for further information.



3 SPECIFICATION

3.1 Mechanical

Type	Free standing Form 4 Type 2 Floor mounted on plinth Purpose Built with individual compartment for each drive
Dimensions	2100mm High, including 100mm plinth 800mm Deep Mfr. To advise Width
IP Rating	IP41 minimum
Access	Front only (Busbars and all cable connections must be fully accessible from the front only)
Cable Entry	Top Cable ways shall be a minimum of 300mm wide
Finish	External RAL 7035 Internal RAL 7035 Plinth Black Internal Mounting Plates Mfr. To advise
Labels	Engraved traffolyte with fixing screws
Lamps	LED type

3.2 Electrical

Supply	415V, 4wire, 50Hz
Busbars	800A, fault rated 50kA for 1 second Uninsulated HDHC copper Horizontal sections to be at top of board Extendable
Metering	Multi-function meter with ModBus on each incomer section Multi-function meter with ModBus on all drives 37kW or larger Ammeter on Drives < 37kW (via current transformers)

3.3 Preferred Suppliers

Soft Starts	Aucom CSXi range
Relays & Timers	See drawings
Terminals	See drawings



4 DRIVE LIST

4.1 MCC 1

Tag	Size	Starting Method	Notes
P3-10	90kW	Soft Start	
P3-11	18.5kW	Soft Start	
P3-13	100kW	Soft Start	
P3-16	45kW	Soft Start	
P3-36	18.5kW	Soft Start	
C3-31	100A	MCCB	

4.2 MCC 2

Tag	Size	Starting Method	Notes
P3-8	90kW	Soft Start	
P3-9	90kW	Soft Start	
P3-14	45kW	Soft Start	
C3-32	100A	MCCB	
	200A	MCCB	Jetty DB
	100A	MCCB	DB1
	100A	MCCB	DB2
P9-1	22kW	Soft Start	
P9-2	22kW	Soft Start	
P9-3	22kW	Soft Start	
P9-9	37kW	Soft Start	
P9-11	37kW	Soft Start	



4 TENDER PRICING

4.1 MCC 1 and Marshalling Section

Total Tender Price £

4.2 MCC 2

Total Tender Price £



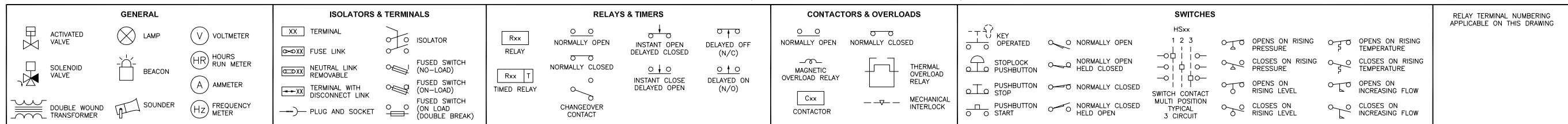
Appendix I

Documentation

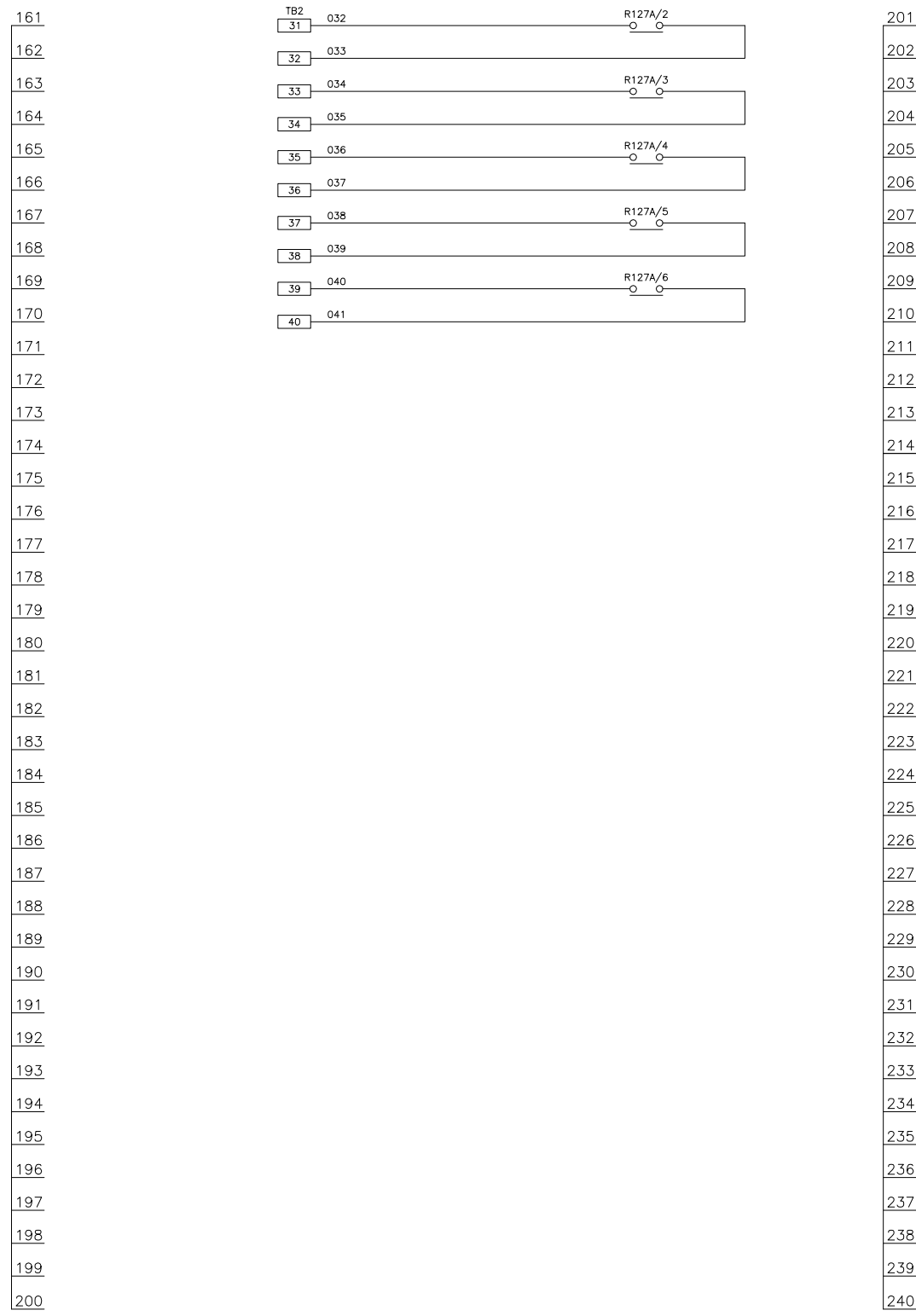
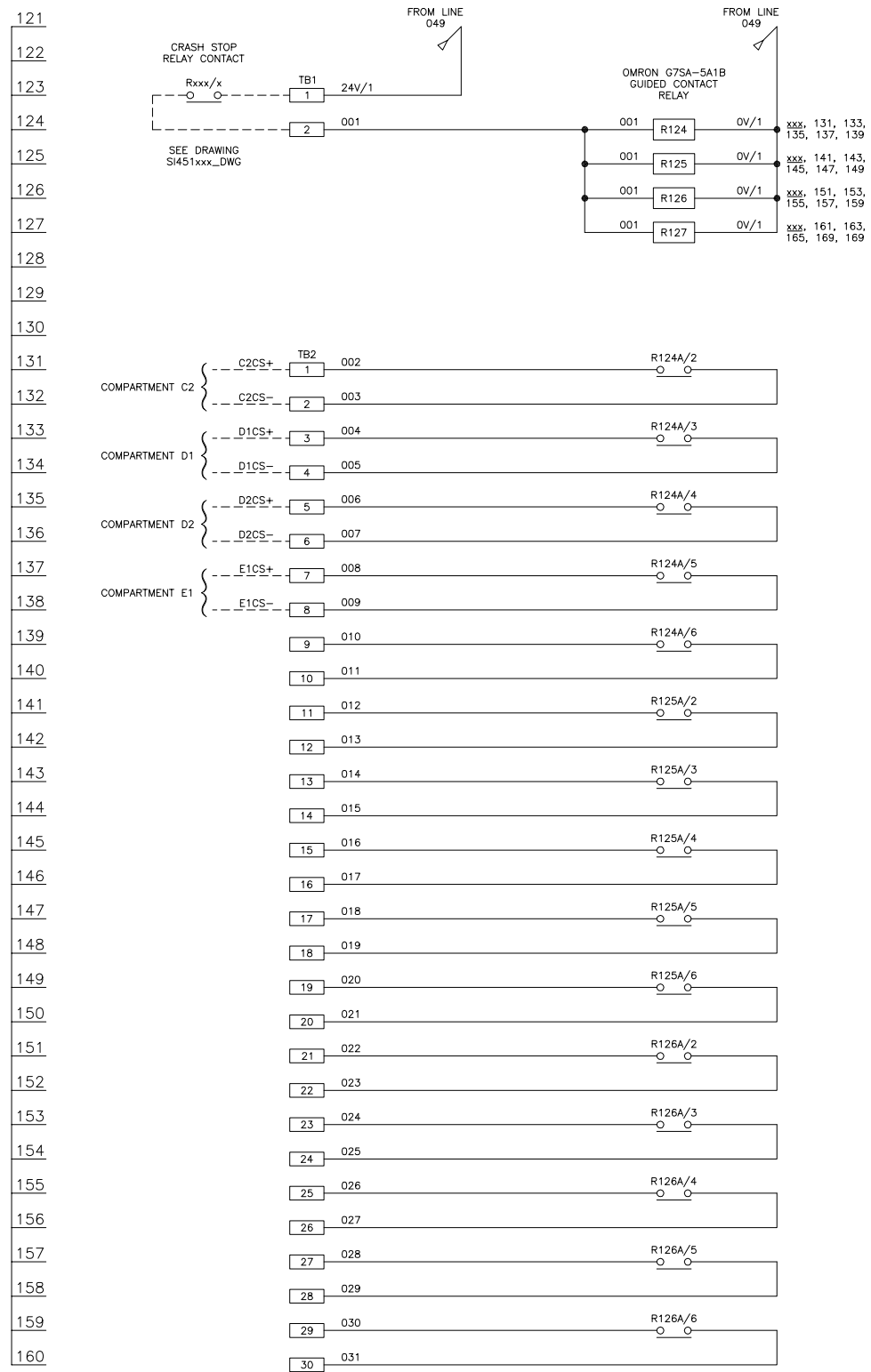
SI452001_DWG	Typical Soft Start Circuit Drawing
SI451002_DWG	Typical DOL Circuit Drawing
SI451005_DWG	Marshalling Panel Layout Drawing
SI451006_DWG	Compartment Door Layout Drawing
SI451008_DWG	Control Power Wiring Drawing
SI451009_DWG	Crash Stop Wiring Drawing



LEGEND OF GRAPHICAL SYMBOLS (ALL CONTACTS SHOWN IN THE DE-ENERGISED STATE)



CRASH STOP



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REV	DATE	BY	DRN	CHK'D	APP'D	DESCRIPTION
A	16/08/12	P.P.	P.P.	M.M.	M.M.	ISSUED FOR TENDER

PLANT	IMMINGHAM STORAGE Co. - EAST TERMINAL
TITLE	No.3 PUMPHOUSE - TYPICAL MCC COMPARTMENT CRASH STOP RELAYS WIRING DETAILS
CLIENT DRG. No.	P&I DRG No. SI451009_DWG

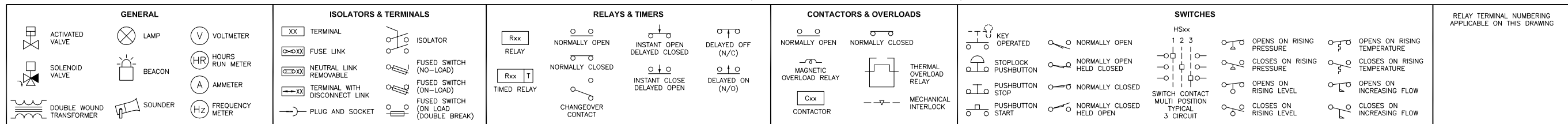
simon bulk liquid & gas network

IMMINGHAM STORAGE Co. Ltd. IMMINGHAM EAST TERMINAL, IMMINGHAM DOCK, IMMINGHAM, N.E. LINCOLNSHIRE, DN40 2ZW

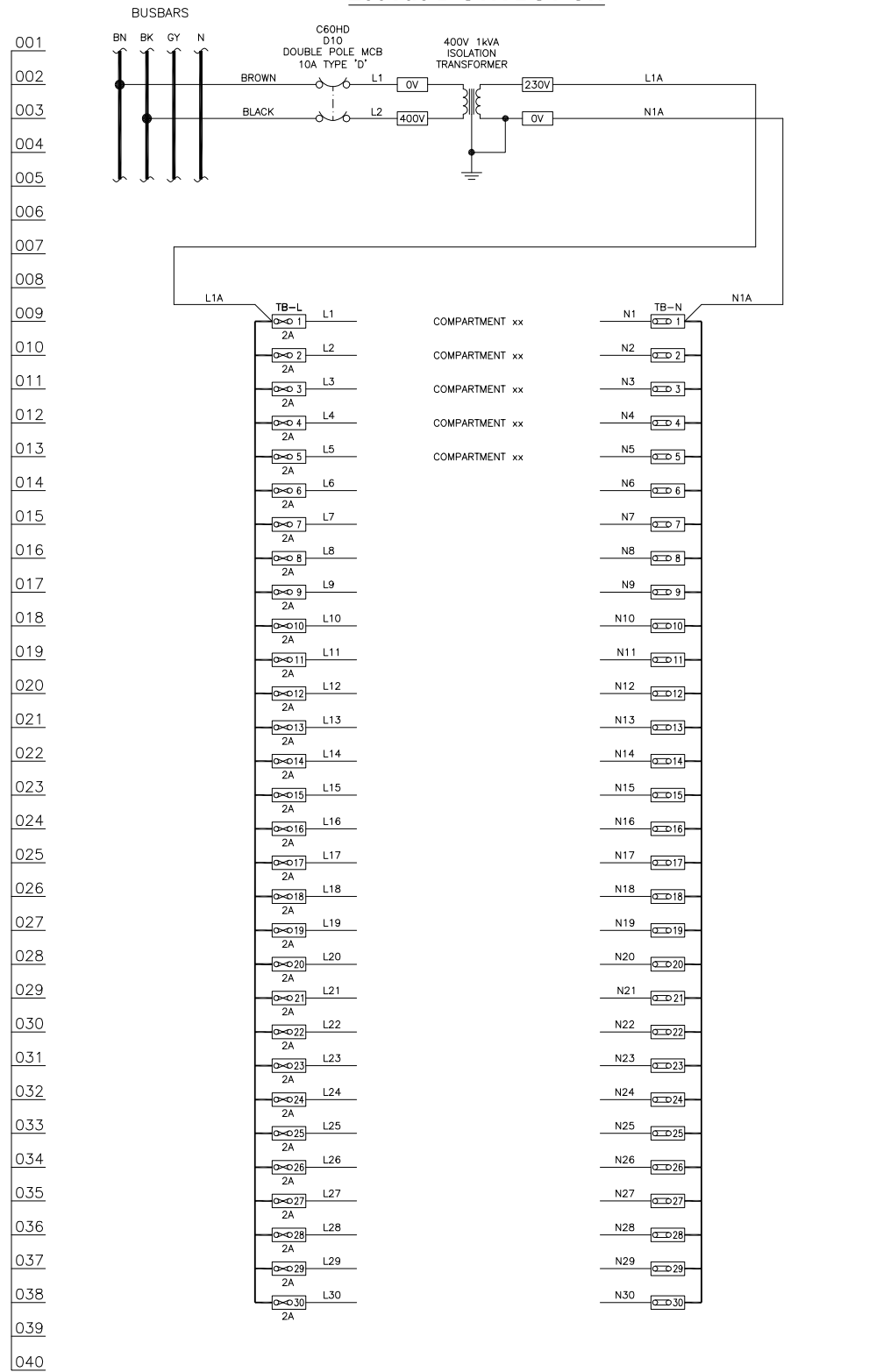
P & I DESIGN P & I Design Ltd Tel: 01642 617444 www.pidesign.co.uk

SHEET 1 OF 1

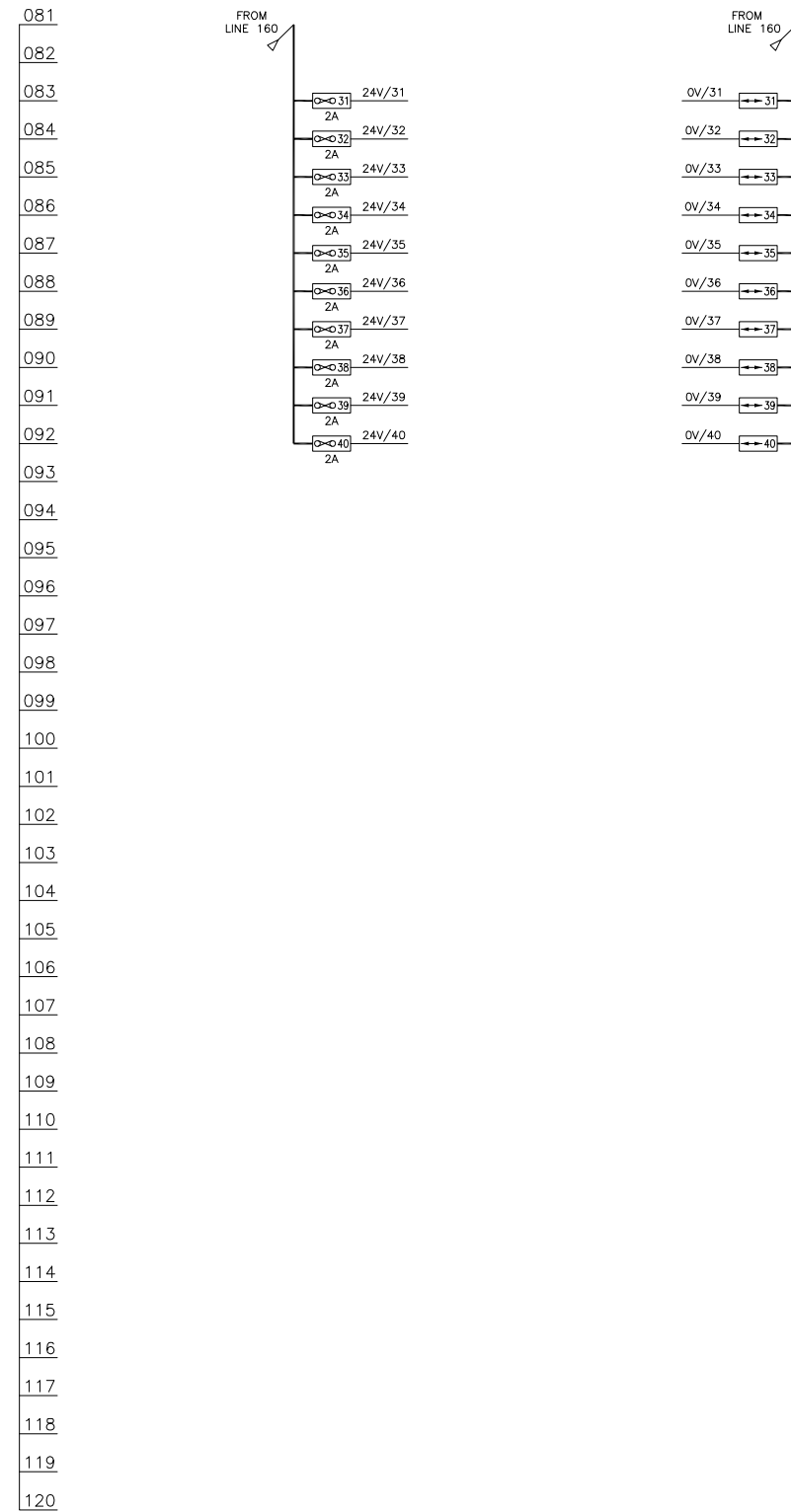
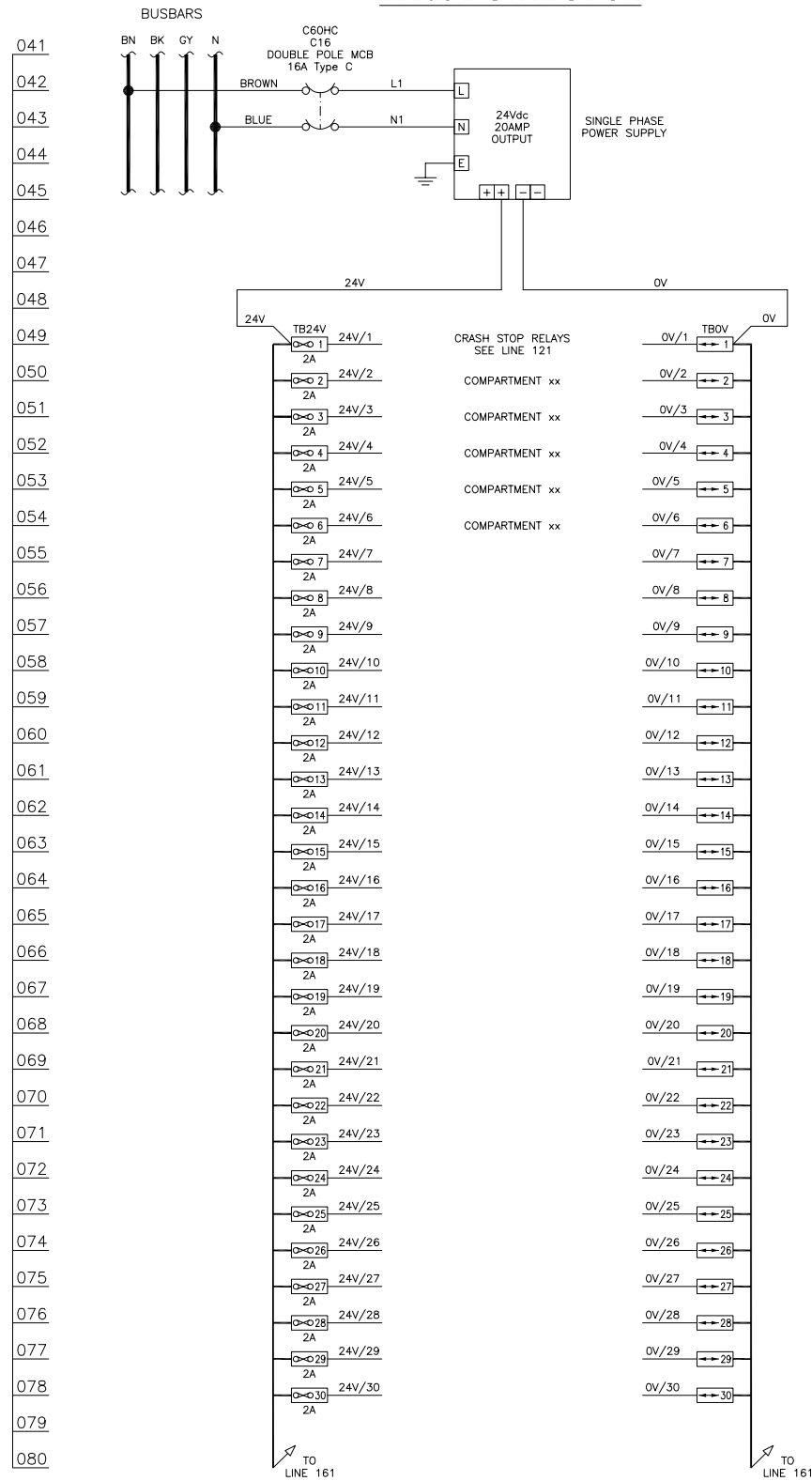
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230Vac DISTRIBUTION

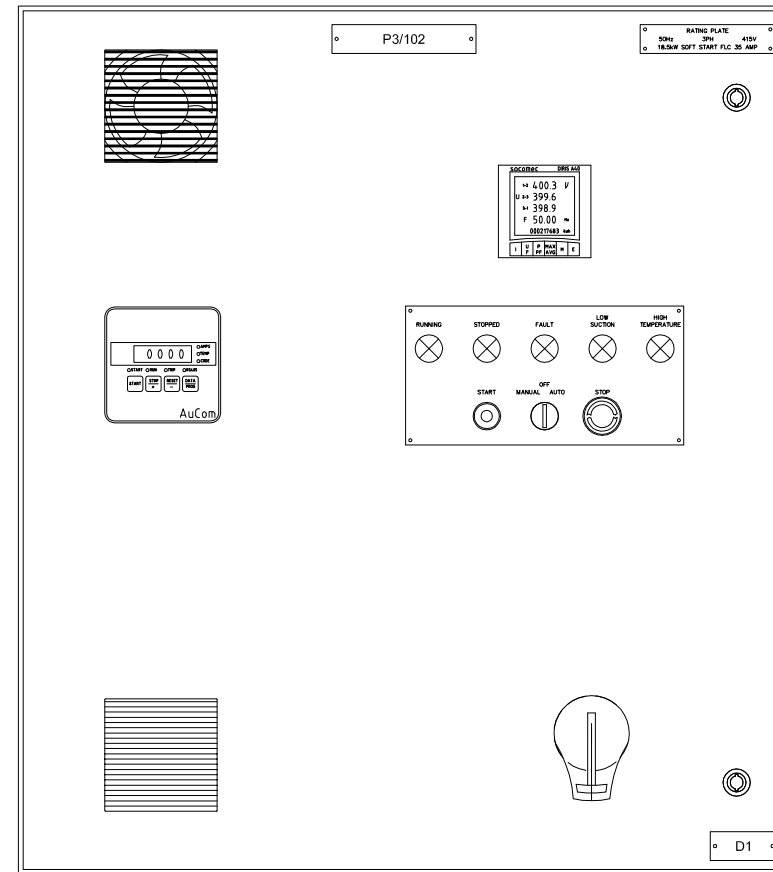


24Vdc DISTRIBUTION

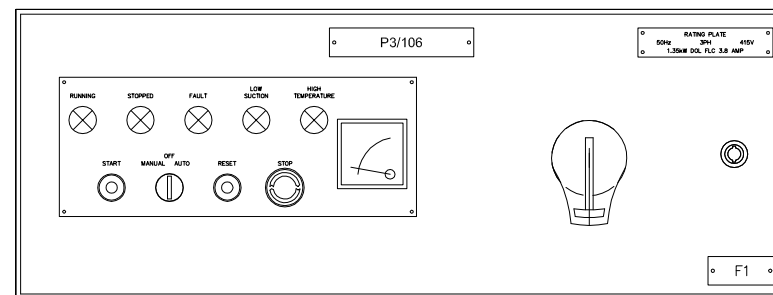


IF NOT SIGNED THIS DOCUMENT IS UNCONTROLLED							PLANT	IMMINGHAM STORAGE Co. - EAST TERMINAL	
REV	DATE	BY	DRN	CHK'D	APP'D	DESCRIPTION	TITLE	No.3 PUMPHOUSE - TYPICAL MCC COMPARTMENT CONTROL POWER WIRING DETAILS	
A	16/08/12	P.P.	P.P.	M.M.	M.M.	ISSUED FOR TENDER			IMMINGHAM STORAGE Co. Ltd. IMMINGHAM EAST TERMINAL, IMMINGHAM DOCK, IMMINGHAM, N.E. LINCOLNSHIRE, DN40 2JW
							CLIENT DRG. No.	P&I DRG No. SI451008_DWG	





TYPICAL SOFT STARTER



TYPICAL DOL STARTER

NOTE

ENSURE THE INDICATOR LAMP SEQUENCE IS AS SHOWN AND THAT BOTH THE SOFT START & DOL COMPARTMENTS ARE IDENTICAL.

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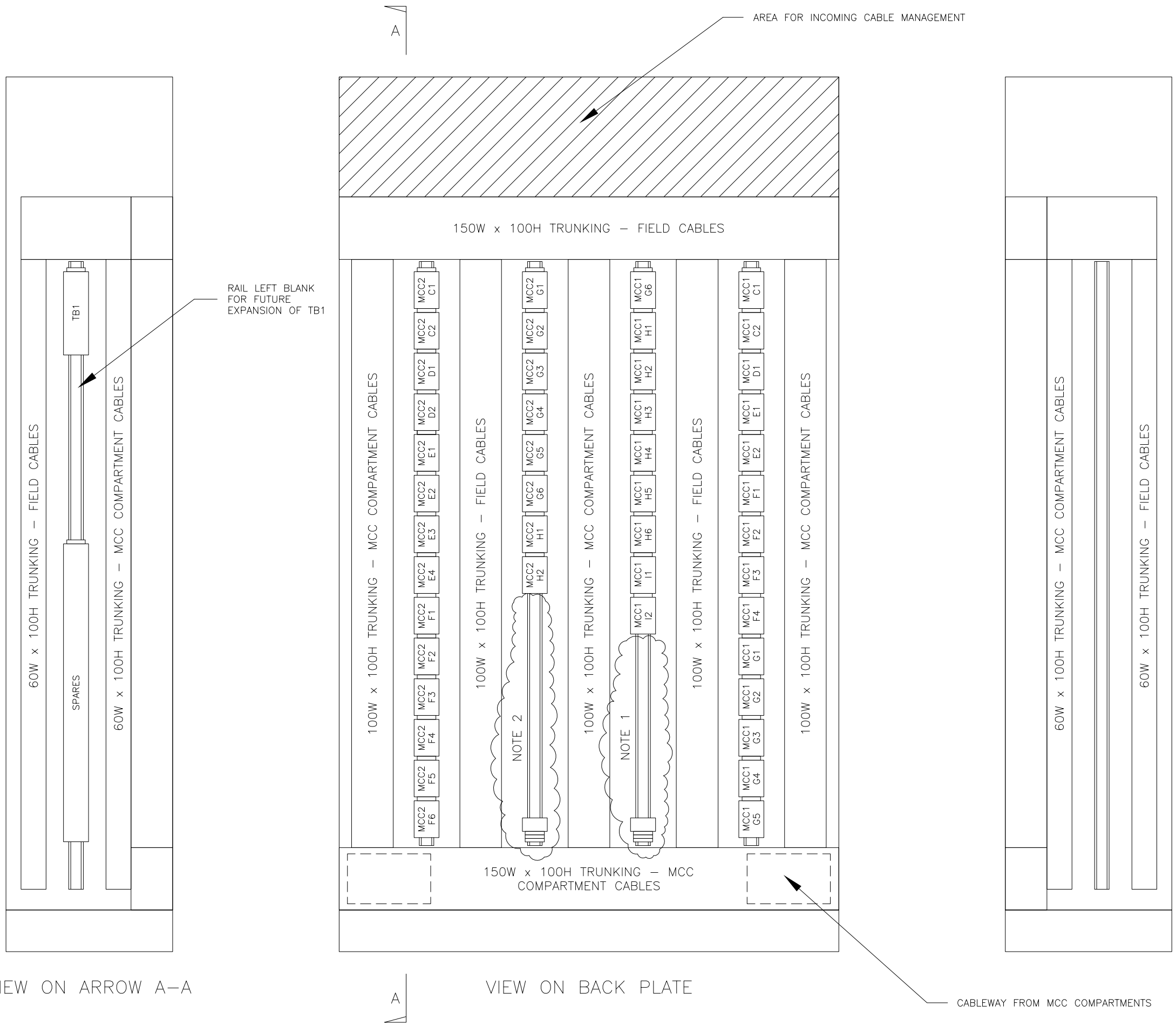
REV	DATE	BY	DRN	CHK'D	APP'D	DESCRIPTION
A	16/08/12	P.P.	P.P.	M.M.	M.M.	ISSUED FOR TENDER

PLANT	IMMINGHAM STORAGE Co. - WEST TERMINAL
TITLE	No.3 PUMPHOUSE TYPICAL MCC COMPARTMENT DOOR ARRANGEMENTS
CLIENT DRG. No.	P&I DRG No. SI451006_DWG

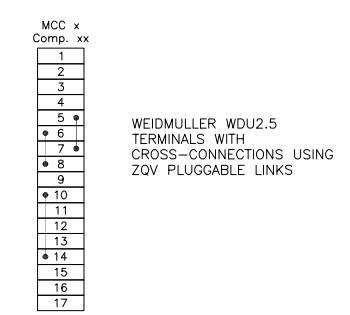


simon IMMINGHAM STORAGE Co. Ltd.
IMMINGHAM EAST TERMINAL,
IMMINGHAM DOCK,
IMMINGHAM,
N.E. LINCOLNSHIRE,
DN40 2JW

P & I DESIGN P & I Design Ltd
Tel. 01642 617444
www.pidesign.co.uk



- NOTES**
- 1) RAIL TO BE LEFT SPARE FOR MCC No.1 FUTURE COMPARTMENT FIELD TERMINALS.
 - 2) RAIL TO BE LEFT SPARE FOR MCC No.2 FUTURE COMPARTMENT FIELD TERMINALS.
 - 3) TB1 : 40-off WDU2.5 TERMINALS
 - 4) SPARES : 140-off WPE2.5 EARTH TERMINALS



TYPICAL TERMINAL BLOCK ARRANGEMENT

VIEW ON ARROW A-A

VIEW ON BACK PLATE

CABLEWAY FROM MCC COMPARTMENTS

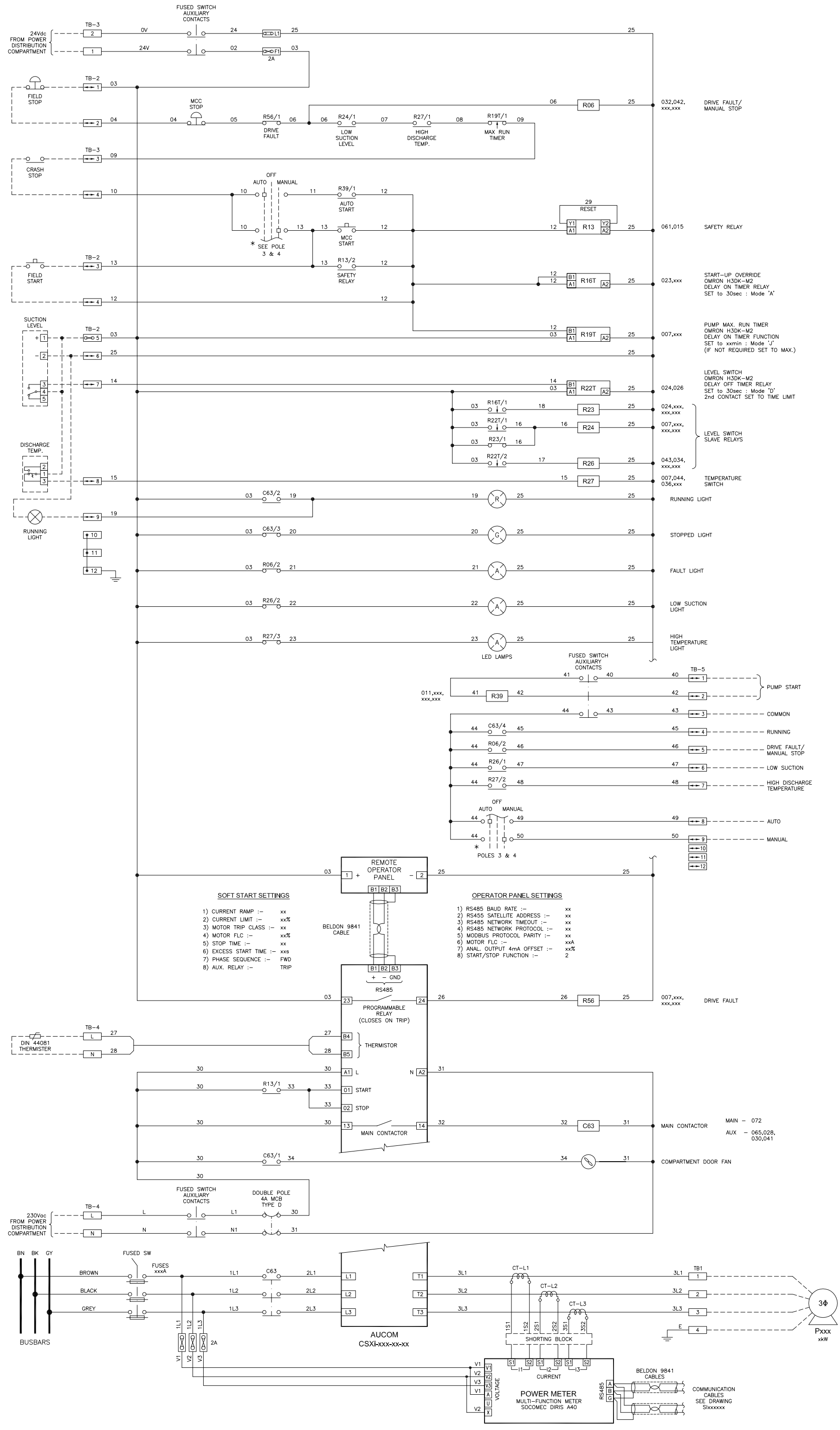


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PLANT	IMMINGHAM STORAGE Co. - EAST TERMINAL
TITLE	No.3 PUMPHOUSE - MCC MARSHALLING PANEL LAYOUT
<small>IMMINGHAM STORAGE Co. Ltd, IMMINGHAM EAST TERMINAL, IMMINGHAM DOCK, IMMINGHAM, N.E. LINCOLNSHIRE, DN40 2JW</small>	<small>P & I Design Ltd Tel. 01642 617444 www.pidesign.co.uk</small>
CLIENT DRG. No.	P&I DRG No. SI451005_DWG
SHEET 1 OF 1	

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- SOFT START SETTINGS**
- CURRENT RAMP :- xx
 - CURRENT LIMIT :- xx%
 - MOTOR TRIP CLASS :- xx
 - MOTOR FLC :- xx%
 - STOP TIME :- xx
 - EXCESS START TIME :- xxs
 - PHASE SEQUENCE :- FWD
 - AUX. RELAY :- TRIP
- OPERATOR PANEL SETTINGS**
- RS485 BAUD RATE :- xx
 - RS485 SATELLITE ADDRESS :- xx
 - RS485 NETWORK TIMEOUT :- xx
 - RS485 NETWORK PROTOCOL :- xx
 - MODBUS PROTOCOL PARITY :- xx
 - MOTOR FLC :- xxA
 - ANAL. OUTPUT 4mA OFFSET :- xx%
 - START/STOP FUNCTION :- 2

PLANT	IMMINGHAM STORAGE Co. - EAST TERMINAL
TITLE	No.3 PUMPHOUSE GENERIC SOFT START MOTOR COMPARTMENT WIRING DETAILS
DESCRIPTION	ISSUED FOR APPROVAL
APP'D	M.M.
CHK'D	M.M.
BY	P.P.
DATE	07/08/12
REV	A

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IMMINGHAM STORAGE Co. Ltd.
P & I DESIGN Ltd
Tel: 01424 617444
www.pidsign.co.uk
BNG 20W

P&I DRG No. S1451001_DWG
SHEET 1 OF 1
CLIENT DRG. No.

RELAYS:

- STANDARD RELAY WITH TEST BUTTON, LED, DIODE & MECHANICAL INDICATOR :-
FINDER TYPE 55.34.9.024.0.0084
FINDER TYPE 94.74.0
- TIMER RELAY :- OMRON H3DK-M2

TERMINALS:

TB1 - TO SUIT OUTCOMING TALS
TB2 - Weidmuller, WS6 & WTR2.5
TB3 - Weidmuller, WTR2.5
TB4 - Weidmuller, WDU2.5 Shrouded
TB5 - Weidmuller, WTR2.5
TB6 - Weidmuller, WTR2.5
TB7 - Weidmuller, WDU2.5

SIZE:

TO SUIT MOTOR LOAD
1.5mm²
1.5mm²
1.0mm²
1.0mm²

COLOURS:

PHASE COLOURS
230V/400V - BROWN
NEUTRAL - BLUE
24Vdc CONTROL - WHITE
0Vdc CONTROL - BLACK

P & I Design Ltd

Process Instrumentation Consultancy & Design

2 Reed Street, Gladstone Industrial Estate,
Thornaby, TS17 7AF, United Kingdom.
Tel. +44 (0)1642 617444 Fax. +44 (0)1642 616447
Web Site: www.pidesign.co.uk

SIMON STORAGE

IMMINGHAM EAST TERMINAL

No.7 SWITCHROOM

MOTOR CONTROL CENTRE

TENDER APPRAISAL

Rev	Date	By	Checked	Approved	Description	Client Ref.
A	18.09.12	M. Morgan	DBF	MM	Original Issue	
						Document No. SI451005_RPT
						Page 1 of 5

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CONTENTS

1	OVERVIEW.....	3
1.1	Introduction.....	3
1.2	Tender Summary.....	3
2	TENDER BREAKDOWN.....	4

References

SI451004_RPT No.7 Switchroom Motor Control Centre Tender

Appendices

- I Armah Switchgear Tender
- II Colmet Controls Tender



1 OVERVIEW

1.1 Introduction

This document has been produced to summarise the tenders submitted for motor control centres for the new No.7 switchroom at Immingham Storage Co., East terminal.

Two companies were approached to tender and both have submitted bids. They are Armah Switchgear in Tyne & Wear and Colmet Controls at Scunthorpe.

1.2 Tender Summary

The bids are summarised below, see section 2 for detailed breakdown and appraisal. For the purposes of selection of manufacturer the prices below represent the total price of supply and installation for MCC1 & 2. Individual prices have been submitted however within the tenders to allow a phased purchasing process.

<u>Supplier</u>	<u>Bid before Clarifications</u>	<u>Final Bid</u>
Armah Switchgear	£71,068.00	£72,885.00
Colmet Controls	£83,289.00	£83,289.00

Notes

1. Armah bid increased after clarification request to provide split delivery resulted in steelwork amendments.



2 TENDER BREAKDOWN

Tender Section	Description	Armah	Colmet	Notes
2.1	MCC1			
	Incomer	800A MCCB	800A fused switch	
	Correct drives allowed	Yes	Yes	
	No of Spare compartments	3 x DOL 1 x Soft Start	6 x Soft Start	All empty compartments
	Crash stop / Control Power compartments	Yes	Yes	
	MCC2			
	Incomer	800A MCCB	800A fused switch	
	Correct drives allowed	Yes	Yes	
	No of Spare compartments	None	1 x Soft Start	
	Crash stop / Control Power compartments	Yes	Yes	
2.2	Marshalling Section	Yes	Yes	
2.3	Layout Drawing	Yes	Yes	
2.5	Factory Testing	TBC	TBC	
2.6	Installation	Yes	Yes	



Tender Section	Description	Armah	Colmet	Notes
3.1	Mechanical	Compliance with requirements but with notes below		
	Dimensions Requirement Max. 2100 H including plinth Max. 800 D (per board) Max. 5600 W	2100H x 5600W x 625D (per board)	2100H x 5400W x 600D (per board)	See Note 1
COST SUMMARY				
	MCC1	£	£	
	MCC2	£	£	
	Marshalling Section	Included	Included	
	Carriage	Included	Included	
	Onsite Installation	Included	Included	
	<u>TOTAL</u>	<u>£72,885.00</u>	<u>£83,289.00</u>	
	Build Time – from order placement to offering for FAT	6 weeks from drawing approval or 8 weeks from receipt of order	8 to 10 weeks	

Notes

1. Colmet compartments smaller than Armah. e.g. 45kW soft start Colmet 600W x 567H, Armah 800W x 800H



Appendix I

Armah Switchgear Tender & Proposed General Arrangement Drawing



Martin Morgan

From: Stephen Purvis <stephen.purvis@armah.co.uk>
Sent: 17 September 2012 3:39 PM
To: Martin Morgan
Subject: AA278 - Immingham East Terminal, No.7 Switchroom

Martin

Further to our conversation please find attached breakdown for the 2 No. MCC's

MCC No.1 £31,869
MCC No.2 £37,340
Installation of MCC No.1 £1,838
Installation of MCC No.2 £1,838

Total Contract price £72,885

Full quotation to follow

Regards

Stephen

stephen.purvis@armah.co.uk
DDE 0191 419 8038



ARMAH
SWITCHGEAR LTD
Tel: 0191 419 2000
Fax 0191 419 1000
Web: www.armah.co.uk
Email: sales@armah.co.uk

A POWERFUL FORCE PROTECTING SUPPLIES

MANUFACTURERS OF SWITCHGEAR AND MOTOR CONTROL PANELS



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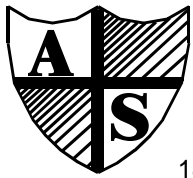


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ARMAH Switchgear Ltd.

A Powerful Force Protecting Supplies

18 Tower Road, Glover West Industrial Estate, District 11, Washington, Tyne & Wear NE37 2SH

Telephone: (0191) 419 2000 Fax: (0191) 419 1000

Web Site: armah.co.uk

E.Mail: sales@armah.co.uk

Our Ref: AA278

Your Ref: Not Applicable

7th September, 2012

P&I Design Ltd

2 Reed Street

Thornaby

Cleveland

TS17 7AF

For the attention of Mr Martin Morgan

Dear Sir

RE: Immingham East Terminal, No.7 Switchroom

We thank you for your recent enquiry and have pleasure in submitting the following quotation.

We trust this meets with your approval, and look forward to receiving your further instructions. Should you require any further information, please do not hesitate to contact the undersigned or contact your Sales Engineer **Alan Hawkins**.

Yours faithfully,

FOR: ARMAH SWITCHGEAR LIMITED

Andrew Turner

Andrew Turner

andrew.turner@armah.co.uk

We can also supply

- | | | |
|------------------------------|-------------------------|-----------------------|
| ⊕ Motor Control Centres | ⊕ UPS Changeover Panels | ⊕ Control Panels |
| ⊕ LV Switchboards | ⊕ Medical Panels | ⊕ Package Substations |
| ⊕ Generator Interface Panels | ⊕ Feeder Pillars | ⊕ Distribution Boards |

Commercial Specification

Immingham, East Terminal, No. 7 Switchroom

Item Ref	Our Ref	Description	Deviation*	Price (£)
1	AA278A	MCC No 1 & 2	N/A	£67,768.00
3	AA278B	Sitework	N/A	£3,300.00

		Total Contract Price		£71,068.00
--	--	-----------------------------	--	-------------------

Item 1 – Motor Control Centre No 1

- 1- Free Standing, Front Access, Floor mounted Motor Control Centre manufactured to Form 4 construction rated to IP54, With a fault rating of 50kA for 1 Second, RAL7032, with approximate dimensions 2105 mm H x 5600 mm W x 650 mm D, complete with a 100mm plinth and comprising the following equipment

Main Incomer

- 1- 800A, TP&N, manually operated, 50kA Non Auto MCCB.

Instrumentation fitted to Main Incomer

- 1- Multi-function Meter c/w kWh pulse output.
- 1- Set of CT's and Protection Fuses.

Starter Sections

- 2- 18.5kW Soft Start c/w all necessary control equipment.
- 1- 45kW Soft Start c/w all necessary control equipment.
- 1- 90kW Soft Start c/w all necessary control equipment.
- 1- 100kW Soft Start c/w all necessary control equipment.
- 1- 100/100A, TP/N, 36kA MCCB c/w standard trip unit, door interlocked rotary handle & terminal shields.
- 3- DOL Starter Compartment - Spares (**Fuseswitch Only Fitted**)
- 1- Soft Starter Compartment - Spares (**Fuseswitch Only Fitted**)

Control Power & Crash Stop Section

- 1- 433V / 240V Control TX.
- 1- Power Supply Unit.
- 1- Set of Omron Safety Relays.
- 1- Set of Terminals.

- 1- Marshalling Section.

- 1- Earth Bar
- 1- Set of Labels
- 1- Set of CAD Drawings

Item 1 – Motor Control Centre No 2

- 1- Free Standing, Front Access, Floor mounted Motor Control Centre manufactured to Form 4 construction rated to IP54, With a fault rating of 50kA for 1 Second, RAL7032, with approximate dimensions 2105 mm H x 5600 mm W x 650 mm D, complete with a 100mm plinth and comprising the following equipment

Main Incomer

- 1- 800A, TP&N, manually operated, 50kA Non Auto MCCB.

Instrumentation fitted to Main Incomer

- 1- Multi-function Meter c/w kWh pulse output.
- 1- Set of CT's and Protection Fuses.

Starter Sections

- 3- 22kW Soft Start c/w all necessary control equipment.
- 2- 37kW Soft Start c/w all necessary control equipment.
- 1- 45kW Soft Start c/w all necessary control equipment.
- 2- 90kW Soft Start c/w all necessary control equipment.
- 3- 100/100A, TP/N, 36kA MCCB c/w standard trip unit, door interlocked rotary handle & terminal shields.
- 1- 250/200A, TP/N, 36kA MCCB c/w standard trip unit, door interlocked rotary handle & terminal shields.

Control Power & Crash Stop Section

- 1- 433V / 240V Control TX.
- 1- Power Supply Unit.
- 1- Set of Omron Safety Relays.
- 1- Set of Terminals.

- 1- Marshalling Section.

- 1- Earth Bar
- 1- Set of Labels
- 1- Set of CAD Drawings

Item 2 – Site Work

Armah Switchgear Ltd to attend site and position the MCC's in a ground floor location within 30 metres of the offloading position. If this is not the case, we reserve the right to amend our price accordingly.

The MCC's would be bolted down to level concrete floor, re-connected and the busbar joints re-torqued.

We will provide temporary lighting and power for our use.

The Price includes for 3 men for approx 3 working days, accommodation, car hire and travel during normal working hours.

Terms/Notes/Deviation/Comments to Specification:

Delivery: 6 weeks from receipt of drawing approval or 8 weeks from receipt of order.
Carriage: Paid to site U.K.
VAT: Extra at applicable rate.
Terms: To be discussed before order is placed.
Validity: This quotation is open for acceptance for 30 days.
Title: Title to these goods passes only on payments in full of all monies outstanding to ourselves.

Tests: Our prices include for routine tests as defined in the appropriate British or I.E.C. Standards. In the event of you requiring these tests to be witnessed or if any testing outside the standard routine tests is required, additional charges may be made.

All Quality Assurance documents are available for inspection at our premises.

All of the above Switchgear would be c/w a 12 months manufacturers Warranty period.

Basis of Quotation: The above quotation has been prepared in line with the following document:
Tender Specification: SI451004

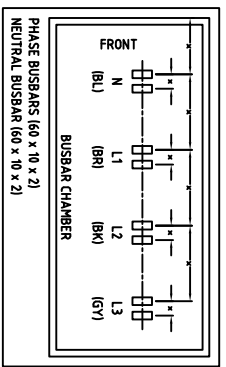
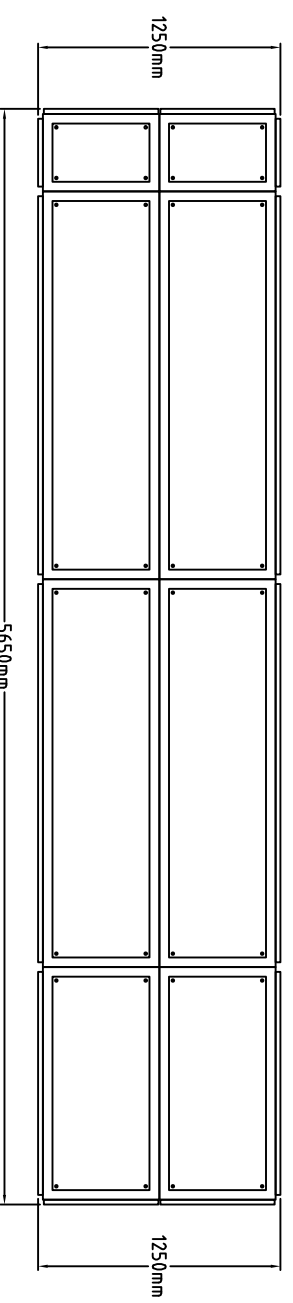
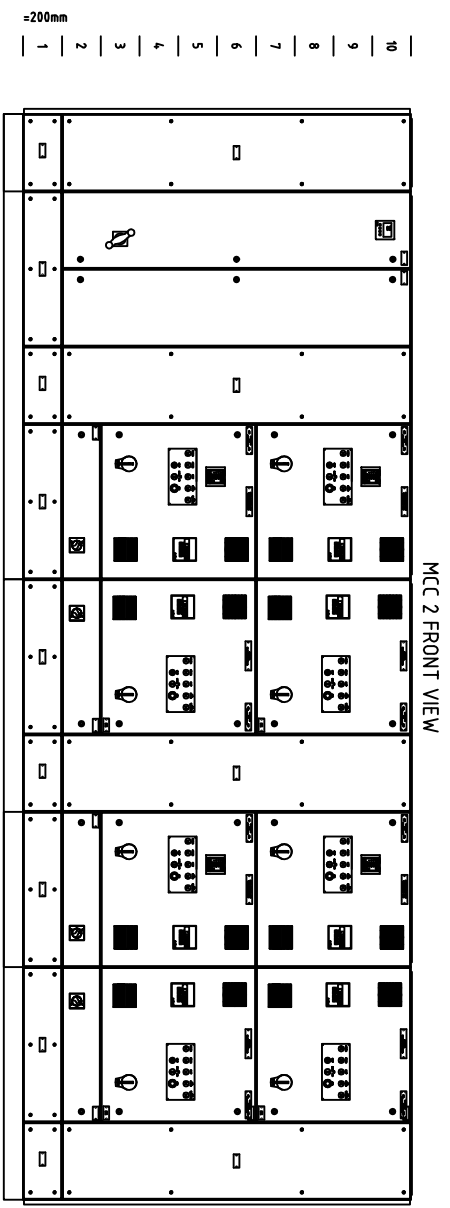
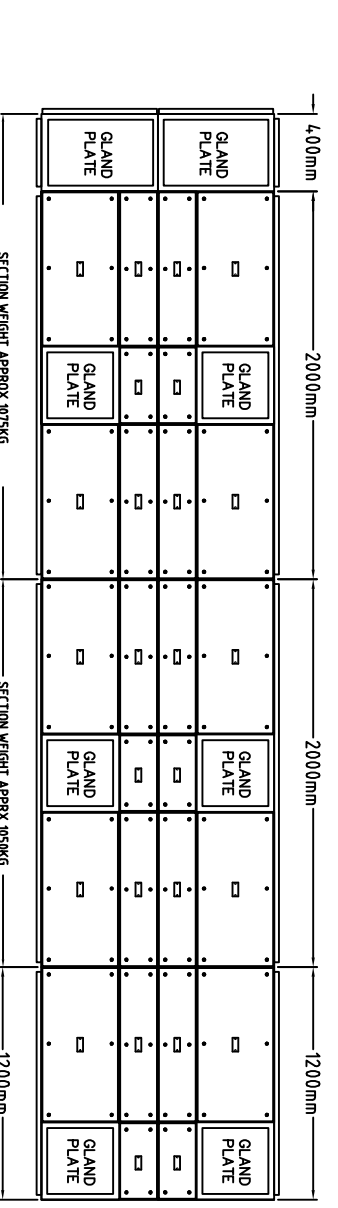
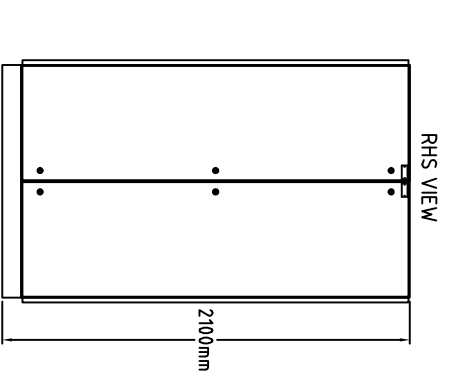
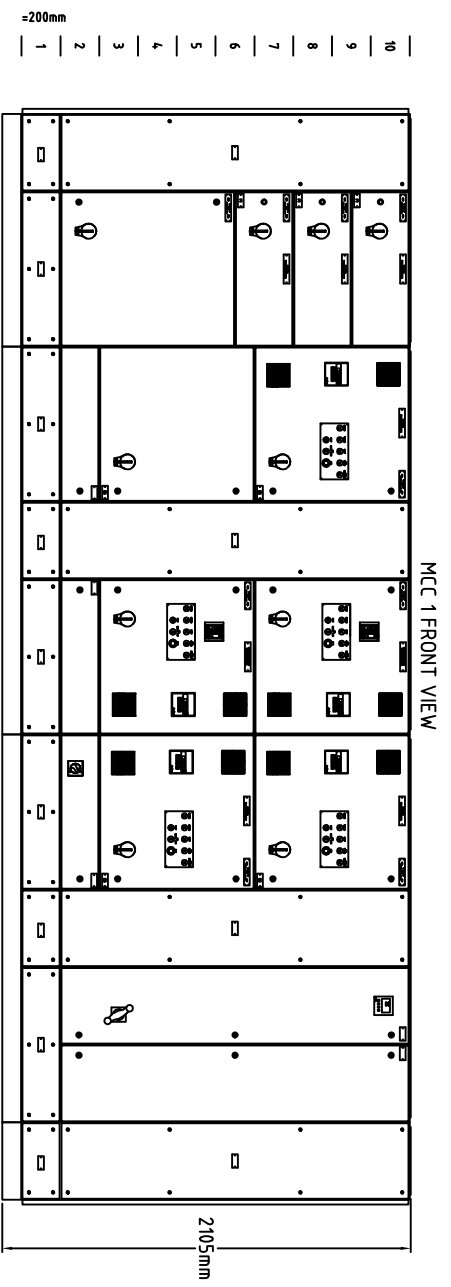
Exclusions: 1) Civil Works
2) All Terminations
3) External Cabling Works
4) Test & Commission
5) We have not included for Rubber Matting
6) We have not included for Electric shock Treatment Posters

Carriage: Our price includes for one delivery to site on a HIAB vehicle.
➤ We assume easy access in and out on a solid road surface for the vehicle
➤ Our price is based upon uninterrupted offloading
➤ We have not allowed for any waiting time
➤ If additional deliveries are required these will be charged at cost + 10%.

O&M's: We have included within our quotation for an Electronic Operating & Maintenance Manual on CD-Rom, further copies are available at a cost of £50.00 each, hard copies are also available at £50.00 per copy.

We would require this contract to be on a purchase order basis we are unable to work with any interim payment terms and have not included any additional monies to cover for retention's or main contractor's discount.

IF IN DOUBT - ASK !



PAIN'T FINISH	LIGHT GREY TO RAL 7035
LABELS	W/B/W TRAFFOLITE
PROTECTION	IP54
CLASSIFICATION	FORM 4
	TYPE 2
BOARD ACCESS	FRONT
CABLE INCOMING	TOP ENTRY
	SIZE: T.B.C.
	TYPE: T.B.C.
CABLE OUTGOING	TOP EXIT
INCOMING GLAND PLATE	ALUMINIUM
OUTGOING GLAND PLATE	ALUMINIUM
MAINS SUPPLY	433V 50Hz TP&N
CONTROL SUPPLY	230/400V
FAULT RATING	50kA/1sec
BUSBARS	UNTINNED
BUSBARS (HORIZONTAL)	FROM FRONT N, L1, L2, L3
	RATING 800A
BUSBARS (RISERS)	FROM FRONT N, L1, L2, L3
	RATING 800A
EARTH BAR	INTERNAL
NEUTRAL BAR	INTERNAL
NEUTRAL / EARTH	REMOTE
EXTENDABLE	ONE SIDE ONLY
LOCKS	
KEY No.	
STANDARD DRAWINGS	

E		
D		
C		
B		
A		
O	ORIGINAL ISSUE	
REV	DATE	REVISION
CLIENT :	P & I DESIGN LTD	
ORDER No :		
SITE :		
TITLE :		

DRN BY	CHECKED	SCALE	⊙ A3
DATE	DATE	WORKS No	
DRG No.		REV	

ARMAH Switchgear Ltd.
 18 Tower Road
 Glover West Industrial Estate
 District 11
 Washington
 Tyne & Wear NE37 2SH.
 Tel : (+44) 191 4192000
 Fax : (+44) 191 4191000
 e-mail : sales@armah.co.uk

UNREGISTERED DESIGN ARMAH SWITCHGEAR LTD 2011

Appendix II

Colmet Controls Tender & Proposed General Arrangement Drawing



P & I Design Ltd
2 Reed Street, Thornaby, UK, TS17 7AF
Tel: + 44 (0)1642 617444
Fax: + 44 (0)1642 616447
www.pidesign.co.uk

DOCUMENT NO: S1451005_RPT

Colmet Controls Limited.

Instrument & Electrical Control Panel Manufacturers
Telephone 01724 845055 Fax 01724 845066
Email: panels@colmetcontrols.co.uk
Web site: www.panelbuilder.co.uk

B6 Mercia Way
Foxhills Industrial Park
Scunthorpe
North Lincolnshire
DN15 8RE



Facsimile Message

Company	P & I Design Ltd.	Your Ref:	SI451004 MCC
To	Martin Morgan	Fax No.	

From	Ron Stafford	Our Ref:	Q12-081-F1
Date/Time	18/09/2012 03:29	Sheets Inc. This	2

R.E. No 7 Switchroom MCC Tender.

Martin,

Thank you for your enquiry regarding the provision of a quotation for the manufacture and supply of an MCC designed to your specifications including the following details.

This Tender is open for acceptance for a period of one month from date of receipt by the Purchaser.

The basis of design will be as your requirements utilising a Form4 Type2 unit built as two sections, MCC1 and MCC2. MCC1 will comprise dual marshalling section, incomer, control compartments, cableways and bus sections. MCC2 will comprise incomer, control compartments, cableways and bus sections. Our drawing 12-081-90 is attached for prospective dimensions and layout consideration.

The incomer will be 800A socomec switch fuse and the bus bars rated at 800A rated 50KA for 3 secs.

Each MCC has a dedicated compartment for crash stop, 230Vac, 24Vdc and spares consideration. Upon completion of panel build the system will be fully tested and the test schedule supplied to the purchaser.

CONTINUATION SHEET 2

Colmet rate for attendance during functional testing will be £30/hr including mileage and travel.

This quotation includes for transportation to end users site, off-loading, positioning, reassembly and testing.

Tender Pricing

MCC 1 and Marshalling Section

Total Tender Price **£40,650**

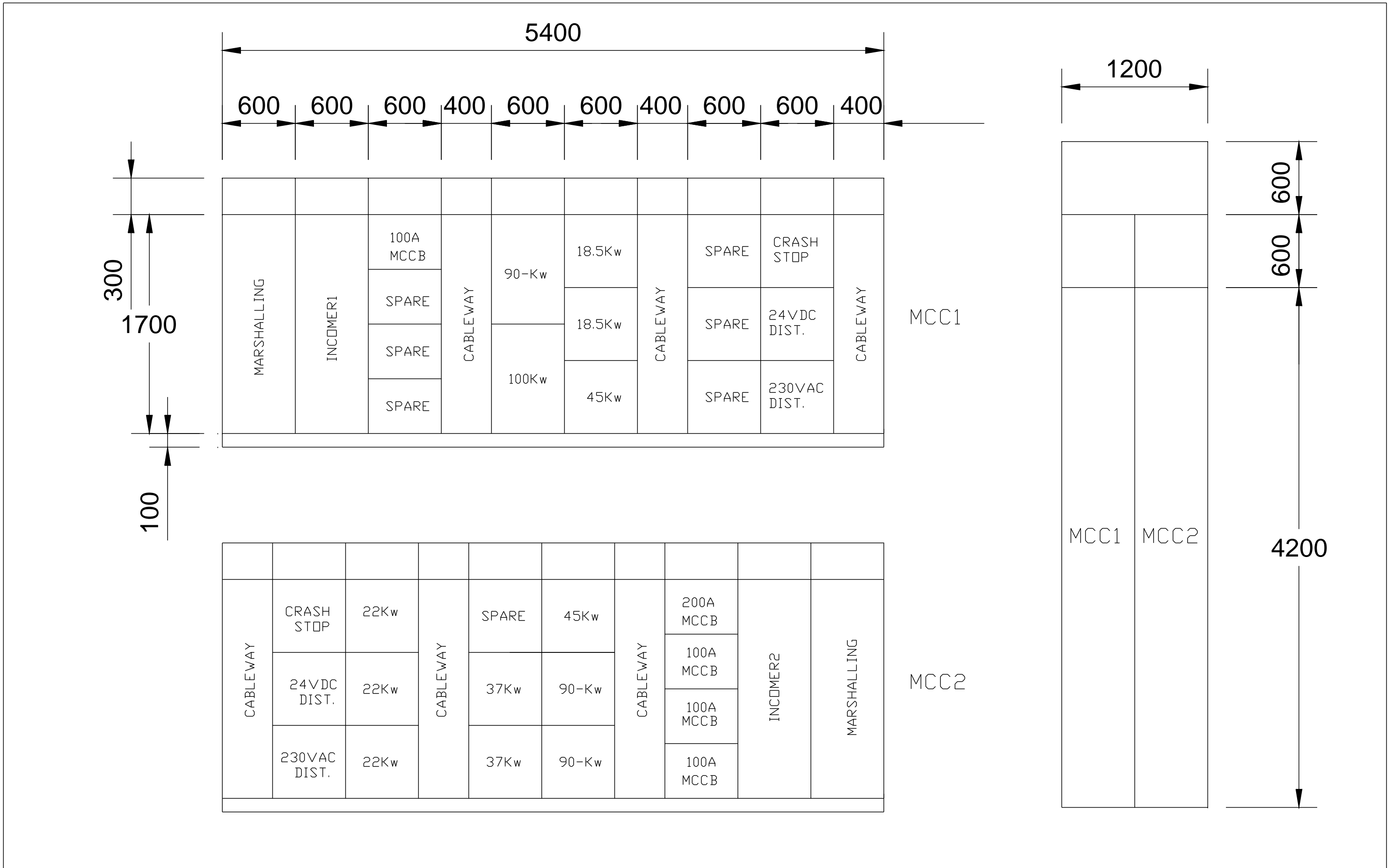
MCC 2

Total Tender Price **£42,639**

Delivery will be 8-10 weeks from receipt of an official order.

Regards

Ron Stafford



REV	DATE	DWN	CHK	APP	COMMENTS
0	6-9-12	RS	.		For Comment
.
.

Colmet Controls Limited.

Control Panel Manufacturers
 B6 Mercia Way
 Foxhills Industrial Park
 Scunthorpe
 DN15 8RE
 Tel: 01724 845055 Fax: 01724 845066
 email: panels@colmetcontrols.co.uk
 Web site: www.panelbuilder.co.uk

CLIENT: P & I Design

TITLE: MCC Layout		
DRAWING No. 12-081-90	PROJECT Q12-081	SHEET No. .1
	FILENAME 1208190	DISC No. .

Section 4
Installation Tenders



P & I Design Ltd

Process Instrumentation Consultancy & Design

2 Reed Street, Gladstone Industrial Estate,
Thornaby, TS17 7AF, United Kingdom.
Tel. +44 (0)1642 617444 Fax. +44 (0)1642 616447
Web Site: www.pidesign.co.uk

SIMON STORAGE

ISCo EAST TERMINAL

No.3 PUMPHOUSE MODIFICATIONS

ELECTRICAL INFRASTRUCTURE

INSTALLATION TENDER

Rev	Date	By	Checked	Approved	Description	Client Ref.
A	15.02.12	M. Morgan	D. Faulkner	MM	Issued for Tender	
						Document No. SI451001_INS
						Page 1 of 14

IF NOT SIGNED THIS DOCUMENT IS UNCONTROLLED

CONTENTS

- 1 INTRODUCTION
- 2 GENERAL REQUIREMENTS
- 3 METHODS OF WORK AND MATERIALS
- 4 SCOPE OF WORK
 - 4.1 Switchroom Containment
 - 4.2 Transit Frames
 - 4.3 Switchroom Cabling
 - 4.4 Contractor Supplied Equipment
 - 4.5 Free Issue Equipment
- 5 CONTRACT PRICING CONTENTS
 - 5.1 Introduction Contractor Supplied Equipment
 - 5.2 Pricing Preambles/Notes on Pricing
 - 5.3 Schedule of Rates
 - 5.4 Programme
- 6 TENDER PRICING SUMMARY

APPENDIX

- I Schedules
- II Cable Specifications
- III Standard Specification for Instrument & Electrical Installations

Revision History

Revision A – Issue for tender.



1 INSTRUCTIONS TO TENDERERS

1.1 Introduction

This document details the scope of work to provide the cabling and containment installation for the newly created switchroom within the existing No.3 Pumphouse building at ISCo East Terminal. It is to be read in conjunction with specification SI003001_INS - Standard Specification for Instrument & Electrical Installations.

The Tender shall be in respect of the proposed works and shall be completed and submitted strictly in accordance with these instructions to tenderers.

1.2 Date, Time and Mode of Delivery

The completed tender packages together with any covering letter and with the remainder of the containing document all in originally bound form (taking account of additions/omissions, etc., notified in writing during the tender period) together with other requirements, shall be submitted by the time stated in the purchaser's letter of invitation to tender.

The envelope must not be marked nor delivered in any way which might disclose the identity of the tenderer.

1.3 Alterations of Tender Documents

No authorised alteration shall be made in the Tender or the accompanying documents.

1.4 Enquiries to be Made Concerning the Tender

Any query in connection with the tender shall be submitted to:-

Mr Martin Morgan
P & I Design Limited
2 Reed Street
Gladstone Industrial Estate
Thornaby.
Tel: (01642) 617444
Fax: (01642) 616447
mm@pidesign.co.uk

A site visit is required to ensure that the work associated with this project is fully understood. The site visit is to be organised by contacting Martin Morgan at P & I Design Ltd.



1.5 Sufficiency of Tender

Before submitting a tender the tenderer should obtain all information, familiarise himself with means of access, location, extent and nature of the site, extent and nature of the services to be provided, conditions under which the services and works will be carried out, conditions affecting supply of staff and labour and any other matters which may affect his tender. applications for costs etc. on the ground of lack of knowledge in any respect of the aforementioned will be refused.

1.6 Confidentiality

The particulars of this document and any tender submitted in respect hereof are private and confidential and shall not be used for any purpose other than the proposed contract. In the event of a tender not being submitted or accepted all documents and drawings shall be returned to the person named in Clause 4 of these instructions to tenderers.

1.7 Contravention of Tender Requirements

Contravention of any of the requirements of these instructions to tenderers with regard to tendering shall render any tender concerned liable to disqualification at the sole discretion of Simon Storage Ltd.

1.8 Contract Agreement

The contractor shall, when called upon, enter into and execute a contract agreement.

1.9 Information to be Supplied by the Purchaser

In addition to the information to be provided by the purchaser prior to the contract award the tenderer shall attach a schedule of any further information which may be required from the purchaser, together with a programme indicating when it will be required.

1.10 Tender Price

The contractor shall make his tender open for acceptance for a period of one month from date of receipt by the Purchaser.



2 GENERAL REQUIREMENTS

Detailed in document SI003001_INS - Standard Specification for Instrument & Electrical Installation Section 2 with the following additional information -

A “For Construction” drawing package will be issued prior to contract. Modifications from the “For Tender” package will be highlighted.

The contractor is to supply details of labour usage to complete the installation within the programme. The contractor shall also supply day rate costs.

Normal site working hours 8.00am to 4.00pm Monday to Friday.

Section 2.4 - Installation

All scaffolding requirements will be included within the contractor’s Scope of Work.



3 METHODS OF WORK AND MATERIALS

Detailed in document SI003001_INS - Standard Specification for Instrument & Electrical Installation Section 3 with the following additional information -

Section 3.11.1 – Testing

No commissioning will commence until handover of cable test certificates and CompEx inspections by the contractor. The contractor will be responsible for providing installation handover to the engineer in good time to progress the commissioning programme.

Section 3.11.2 – Commissioning

The contractor will not power any equipment without the consent of the engineer. The contractor will not be required to carry out commissioning. However, he should be available to carry out any remedial works during commissioning.



4 SCOPE OF WORK

The scope of work is as detailed in the following sections and as shown on the documentation listed below.

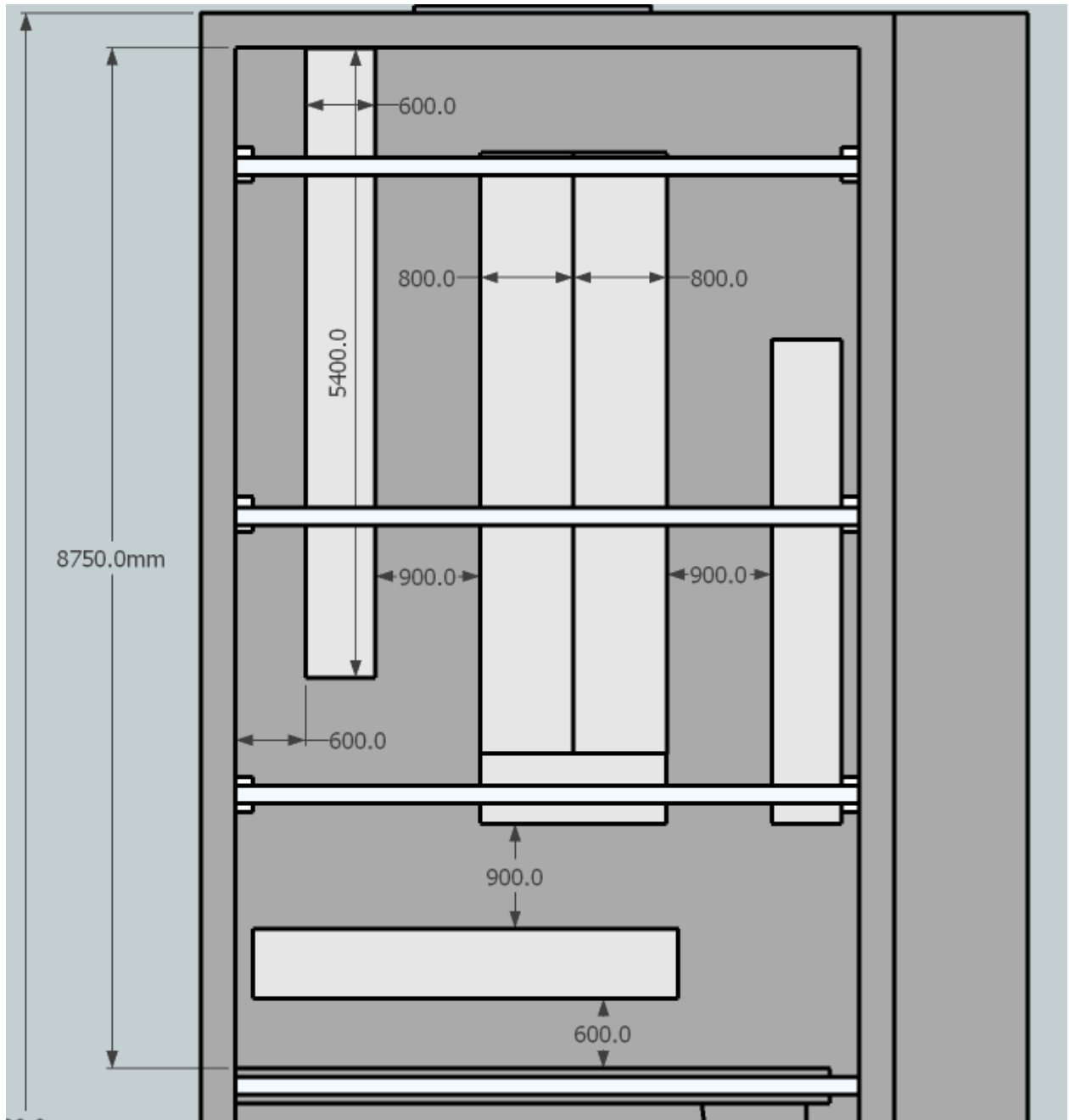
Cable Schedule	SI451001_SCH Rev A
Basis of Design Document	SI451001_RPT Rev B

4.1 Switchroom Containment

Referring to switchroom layout sketch in 'Basis of Design document SI451001_RPT, already issued (sketch repeated below). Extensive cable racking is to be provided to provide the infrastructure for this scope and the future final switchroom layout. Some racking is currently being installed under a separate contract by Aquabio and new racking will have to tie into this as far as possible.

- a. 2 off 900mm ladder racks vertically stacked one for power and one for control, extending wall to wall across the newly constructed southern switchroom wall between expected external cable entry positions. This racking is to pass over the top of the LV board. Power rack to be above control rack.
- b. 2 off 900mm ladder racks side by side for power cables extending from the power rack in (a) above, across the top of MCC 1 & 2 throughout the length of the switchroom to cater for future extension of the MCCs.
- c. 2 off 900mm ladder racks side by side for control cables extending from the control rack in (a) above, across the top of MCC 1 & 2 marshalling section and terminating prior to the start of the main MCC. These shall be positioned beneath the power racks.
- d. 2 off 600mm ladder racks vertically stacked, one for power and one for control, extending from the 900mm racks in (a) above around the eastern side wall of the switchroom to provide for cables to future control panels positioned against the switchroom wall.
- e. 2 off 600mm ladder racks vertically stacked, one for power and one for control, extending from the 900mm racks in (a) above, around the western side of the switchroom to provide for cables to future panels. These racks are to be aligned with the Aquabio panel which stands away from the side wall. The racks are to terminate at the Aquabio panel but will need to carry the main power cable from the LV board to the Aquabio panel main incomer.





4.2 Transit Frames

An option price is to be provided to supply labour and materials to provide transit frames for all cables entering the switchroom. The mounting and sealing of the frames into the building structure would be by others.

The transit frames have not been sized at this time so the following shall be assumed for tendering purposes.

- Two Hawke HCX6x7 Transit Frames in the eastern wall.
- Two Hawke HCX6x7 Transit Frames in the western wall.

Insert and filler blocks will be specified separately as part of a further scope of work.

4.3 Switchroom Cabling

4.3.1 LV Board Supplies

Install new cable from LV board section C2 to existing Switchboard in Pumphouse (currently fed by cable P30025).

Install new cable from LV board section C1 to existing Switchboard in Pumphouse (currently fed by cable P30015).

Remove cable P30015 from existing switchboard and extend using scotchcast joint or equivalent. This cable will be extended to provide power to the incomer of the new LV board.

Remove and extend existing 120mm² separate earth cable from same switchboard and extend to new LV board.

4.3.2 Aquabio Effluent Treatment Switchboard

Install power cables from LV board section B1 to Aquabio incomer.

4.4 Contractor Supplied Equipment

None

4.5 Free Issue Equipment

None



5 CONTRACT PRICING CONTENTS

5.1 Introduction

The Tenderer must complete the Schedules attached in Sections 5.3.4 & 6 completing the lists of categories of unit rates for variations. The Tenderer must not re-type or make any other alterations to the wording.

Engineer authorised variations in respect of the provision of the aforementioned services to be paid in accordance with Section 5.3.4.

Payment under hourly/day rates for variations to Contract will only be made to the Contractor for Personnel approved by the Purchaser and will only be made in respect of all approved hours worked, or pro-rata to the nearest half hour, half day or whole day respectively.

5.2 Pricing Preambles/Notes on Pricing

5.2.1 General

These Pricing Preambles relate to Rates, Sums and Amounts entered in Schedules which form part of the Contract.

In arriving at said Rates, Sums and Amounts, the Contractor will be deemed to have taken account of the Conditions of Contract, the Specification/Scope of Work, the Particular Specification, these Pricing Preambles and any other matters which affects said Rates, Sums and Amounts.

Rates, Sums and Amounts, except where otherwise provided in the Contract shall be fixed for the duration of the Contract.

Completion of Lump Sums, Normal Time Rates.

- 5.2.1.1** A Rate, Sum or Amount shall be entered by the Contractor against each reference or item and reference or items against which no Rate, Sum or Amount is entered shall be deemed to be covered by other Rates, Sums or Amounts entered elsewhere in the Schedules.
- 5.2.1.2** The Contractor shall omit from his Tender any Value Added Tax chargeable or any taxable supplies made under Contract to the Purchaser and payable by him as a taxable person to the Commissioners of Customs and Excise.
- 5.2.1.3** The Contractor shall allow for compliance in all respects with the applicable British Standard, Codes of Practice and any other Standards or Codes specified. The Contractor shall be fully responsible for obtaining such documents and familiarising himself with same.
- 5.2.1.4** The Contractor shall allow for compliance with all statutory safety regulations, including those of the Purchaser, and executing the Services in such an order or sequence as may be required to accord with the overall Project programme requirements.



5.3 Schedule of Rates

5.3.1 General

5.3.1.1 Schedule of Rates

A schedule of rates is to accompany the tender.

5.3.1.2 Man-hours

The Man-hour Rates which the Contractor inserts in the Schedule shall be deemed to include, but not necessarily be restricted to all allowances required for the following:

All cost associated with the employment of labour including the requirements of Government enactment's (V.A.T. excepted) and/or other suitable National Working Rule Agreement.

Supervision by non-working trade supervisors, other than those allowed separately by the Contractor in the General Preliminaries section of the Tender.

All man-hours and costs associated with collecting "Free Issue" materials from the Purchaser's stores or compounds and transporting to the Contractor's store or workshop, including all loading, unloading, stacking and storage. Also any costs associated with off-loading, stacking and storage of materials supplied by the Contractor. Compilation of stores record system and final reconciliation for all "Free Issue" materials. Generally this store will be located on the site.

Loading and transporting from the Contractor's store or compound and assembling and installing in the final position.

The installation of all work and operations required by the Specifications and Works Rules and Regulations.

The carrying out of any tests including submission of samples where required. Any necessary site measurement and sketching for fabrication and erection purposes.

Marking up construction drawings to record the "As Built" installation.

All necessary allowances for small hand tools and consumables which are not included as Constructional Plant in the General Preliminaries section of the Tender.

Protecting the works during construction period from damage and for making good /reinstating damage caused.

All required allowances for overhead and profit.



5.3.2 Materials

The material prices which the Contractor inserts in the Schedule of Rates shall be deemed to include the following:-

All costs associated with delivery to the Contractor's site stores or compound.

Any demurrage charges or costs associated with returning packing cases, drums and the like for materials supplied by the Contractor.

All necessary allowances for waste.

All necessary allowances for consumables.

All necessary fixing devices.

5.3.3 Testing

The man-hour rates shall include for all testing.

5.3.4 Schedule of Day work Rates

Variations shall be valued on a lump sum basis. Such lump sums shall be derived from the Schedule of Rates below and the man-hour estimates for the variations which the Engineer has agreed in writing and all of which shall be subject to the issue of a Variation Order.

Position	40 Hour Rate	Time & ½ Rate	Double Time
Site Supervision			
Working Foreman			
CompEx Approved Technician			
Approved Electrician			
Electrician			
Labourer			

Percentage to be added to net cost of materials %

Site Establishment

Cost inclusive of site management, office facilities, £
 messing, toilets and constructional equipment at a weekly rate.



5.4 Programme

5.4.1 Provisional Programme

The following information is supplied for the guidance of the Tenderer and is provisional only, based upon the information available at the time of issue of the Tender:

- i Site visit – By arrangement
- ii. Tender required by – 17.02.12
- iii. Earliest date on which work can commence – Immediately
- iv. Latest date for completion, including all testing – TBA ISCo Engineer

The tenderer shall include a provisional programme with the tender to include key milestones for delivery of equipment within their supply.



6. Tender Pricing Summary

This tender summary to be completed by the tenderer, applies to the Scope of Work for the No.3 Pumphouse upgrade project for ISCo East terminal.

- | | | |
|----|--|---|
| 1. | Supply and installation of ladder rack | £ |
| 2. | Supply and Installation of cabling | £ |
| 3. | Supply and installation of switchroom earthing | £ |
| 4. | Testing and Documentation | £ |
| 5. | Miscellaneous (Please State) | |

Sub Total £

Site Establishment Total (based on weeks) £
(See Section 5.3.4)

Total Tender Price £



Appendix I

Schedules

SI451001_SCH Rev A – Cable Schedule



Appendix II
Cable Specifications
Type 'J'



TYPE	J
DESCRIPTION	XLPE Insulated Power Cable - Armoured
MANUFACTURING SPECIFICATION	BS5467
SERVICE	Power Distribution / Control (Max. 440V ac.)
VOLTAGE	600/1000V.
CONDUCTORS	Stranded Copper
INSULATION	XLPE (Cross Linked Polyethylene)
CORE COLOUR CODE	1 core Brown 2 cores Brown, Blue 3 cores Brown, Black, Grey 4 cores Brown, Black, Grey, Blue 5 cores Brown, Black, Grey, Blue, Green/Yellow 7 cores } 12 cores White insulation with core number indelibly marked at 19 cores regular maximum intervals of 50mm 27 cores } 37 cores 48 cores }
SHEATH	Black PVC
ARMOUR BEDDING	PVC
ARMOUR	Single Core - Aluminium Wire Multi Core - Galvanised Steel Wire
NOTES	The cable type shall be followed by a number that defines the number of cores within a given cable. e.g. J12 indicates a twelve core type J cable.

Appendix III

Standard Specification for Instrument & Electrical installations

SI003001_INS Rev A



P & I Design Ltd

Process Instrumentation Consultancy & Design

2 Reed Street, Gladstone Industrial Estate,
Thornaby, TS17 7AF, United Kingdom.
Tel. +44 (0) 1642 617444 Fax. +44 (0) 1642 616447
Web Site: www.pidesign.co.uk

SIMON STORAGE LTD.

IMMINGHAM EAST TERMINAL

**STANDARD SPECIFICATION FOR
INSTRUMENT & ELECTRICAL INSTALLATION**

Rev	Date	By	Checked	Approved	Description	Client Ref.
A	17/02/09	DBF	MM	MM	Original Issue	
						Document No. SI003001.INS
						Page 1 of 14

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CONTENTS

- 1 Introduction
- 2 General Requirements
- 3 Methods of Work and Materials

APPENDICES

- I Applicable Standards



1 INTRODUCTION

This document details the specifications required to install instrument and electrical equipment and associated systems at Simon Storage Ltd. ISCO East Terminal. This document covers all aspects of industrial instrument and electrical installation work and may contain sections that may not be relevant to every project.

2 GENERAL REQUIREMENTS

The Contractor is to supply all labour, cables, cable tray/ladder racking, equipment and materials necessary to complete the works detailed.

2.1 General Conditions of Contract

The Contractor is required to work to the Employer's Condition of Contract;

2.2 Requirement of Contract

To carry out works to install the instrument and electrical element of the project. Works will be carried out while surrounding systems are under construction and care must be taken to avoid any clash with other trades. It may be necessary to carry out some of the works during agreed shutdowns. The Engineer will liaise closely with the Contractor to ensure that the required systems are made available.

2.3 Safety

The Contractor is required to work to the Employer's Safety Conditions.

Following Tender assessment, the successful Tenderer will be required to attend a meeting and participate fully in the formulation and regular update of the final Health and Safety Plan for the Project.

2.4 Installation

All labour, including unskilled, skilled and supervisory staff involved in the off-loading of equipment at the site and in the complete installation, assembly and testing of all the items included in the contract.

All materials required for the contract including earth conductors and furse clamp/fixings, cable ladder, tray, channel, supports, cable as detailed in the schedules.

All tools and equipment, including lifting equipment, scaffolding, general plant required in the performance of the contract and all necessary testing equipment.

The provision of all site facilities and any temporary electricity supplies.

All builders work including drilling and fixing to the civil structure, any necessary grouting and the sealing of holes, ducts and trenches after cable installations. All fixings, nuts, bolts,



2.4 *Installation (Cont.)*

studs, washers, gaskets and any other appurtenances necessary to provide a complete and operational installation.



3 METHODS OF WORK AND MATERIALS

3.1 Installation Standards

Equipment and installation shall comply with all relevant standards, statutory instruments, regulations and authorities current and governing at the time, with particular reference to those detailed in Appendix IV.

If interpretation of the standards shall prejudice any part of this specification, where requirements may be in excess of those called for in the standards, the Purchaser's standards shall apply.

3.2 Materials

All materials used in manufacture, construction or installation shall be new and specifically suited for their duty or purpose.

The Contractor shall provide all miscellaneous materials, not of free-issue nor specifically defined by the Company, which are necessary to complete any installation to the required standard.

3.3 Electrical Contractor

All work carried out shall be performed by a qualified electrical contractor, approved by the National Inspection Council for Electrical Installation (NICEIC). Work shall comply with the relevant British Standards. The contractor shall ensure that either:-

All electricians employed on the project have suitable experience of working on hazardous area equipment or a qualification for working on Electrical Equipment in Hazardous Areas (CompEx),

or,

that the complete installation is checked and certified by a CompEx certified person.

3.4 Position of Electrical Equipment and Appliances

The approximate positions of electrical apparatus such as motors, instruments, and distribution boards are shown on the drawings, but their exact positions shall be determined on site by an appointed representative of the Engineer.

The position of electrical apparatus shown on the drawings shall be assumed to be correct for the purposes of tendering, but they may be reasonably varied without extra cost.

The Contractor shall ascertain on site that his work will not foul other engineering services or equipment and any work which has to be re-done, due to negligence, in this respect shall be his responsibility.



3.5 Segregation of Service

All cable supports and cables shall be prevented from coming into contact with process equipment and piping by a spacing of 150mm.

Cables operating at a voltage of 110V AC and above shall be segregated from cables operating at a voltage of 24V DC and below.

Intrinsically safe circuits shall not share multicore cables with none intrinsically safe circuits.

3.6 Fixings

No structural steelwork shall be drilled for any purposes without the approval of the Engineer. In general, all fixing to steelwork shall be by means of studs welded to the steelwork or by clamp brackets or hook bolts. Permission shall be obtained from the Engineer for any other type of fixing. Any protective coating damaged by welding, etc. should be made good by a method approved by the Engineer.

The supply and fixing of all support brackets, clamps and spacers and any other steelwork, whether or not shown in detail on the drawings or otherwise, which may be required for the proper and effective fixing of any equipment shall be considered to be included in the material and labour for the supply and fixing of that equipment, unless this work is specifically detailed in the Schedules.

Where PVC sheathed cable is used, cable cleats and supports shall be as recommended by the cable manufacturer. They shall be designed to avoid any damage to the PVC sheaths by sharp edges and excess pressure.

Cables erected on walls or steelwork shall, so far as is practicable, be so supported that no flexing can occur. Generally cables shall be supported on cleats which clamp the cables to prevent longitudinal movement.

Lightweight equipment and conduit saddles may be fixed to the building structure by means of screws in metal or plastic plugs. Wood or fibre plugs shall not be used.

Fixing to brickwork shall be made in the bricks and not in the joint. If it is not possible to make all the fixings in the brickwork, then the equipment shall be positioned to enable the upper fixings to be made in the brickwork.

Shot fixing bolts shall not be used.

Any additional scaffolding required will be included within the Contractor's Scope of Work. Note: Existing scaffold in place to assist with the Mechanical Pipework Installation may be used.



3.7 Clean Up

During and on completion of installation work the Contractor shall remove all surplus equipment and material and leave areas in a 'brush clean' condition. Refuse shall be disposed of as directed by the Engineer.

Prior to testing (where damage could arise) and before offering any part of the installation for acceptance, the Contractor shall clean out all electrical enclosures and wipe down painted surfaces. If necessary, damage to paintwork shall be made good by touch-up.

Before finally leaving the site, the Contractor shall remove all his accommodation, plant, tackle and tools of the trade to the satisfaction of the Engineer.

3.8 Earthing

3.8.1 General Soil Conditions

No information is available.

3.8.2 System Earthing

The neutral shall not be regarded as an earth conductor.

In areas where earth rods are to be driven into the ground, it shall be the contractors responsibility to ensure that there are no other underground services in the immediate vicinity.

3.8.3 Equipment Earthing

The main earthing bar as identified in the specific project documentation will be connected by a separate earth conductor to its main earth point. All non-live metalwork shall be directly or indirectly bonded to the main earth bar. Such metalworks will include electrical equipment enclosures, motor frames, tray/ladder rack to be continuously bonded, cable armouring and glands. All glands which are through clearance holes require an earth tag and connection to the earth system by 6 sq.mm cable. Care must be taken to ensure that paint, etc. is cleaned away from under earth connections so that there is good earth continuity.

Direct bonding shall be taken to mean dedicated earth conductors within, or separate from, plant cable. Separate conductors shall be multi-stranded copper with a green/yellow sheath, size as specified in the drawings. Indirect bonding shall be taken as earth paths through armouring.

Note: (Dedicated earth conductors preferred).

However, a combination of both may be employed, providing that the value of the earth loop impedance allows flow of fault current sufficient to rupture associated protective fuses within five (5) seconds.



3.8.4 Lightning Protection

Lightning protection is not anticipated for the plant.

3.9 Cabling

3.9.1 General

The schedules detail the cables with the estimated lengths for tendering purposes only. It is the Installation contractors responsibility to site measure prior to any cable installation and any cost variation must be advised to the Engineer for approval before installation.

All cables above 16 sq mm section shall have shaped conductors.

Before any armoured cable is installed, triplicate copies of the test certificate giving details of these tests shall be submitted to the Engineer for approval.

When delivered to site, each coil of cable shall have attached the manufacturer's test certificate.

When cables are steel wire armoured, the conductance of the armour shall be not less than 50% of the conductance of one phase core.

3.9.2 Installation

Bending radii shall conform to the maker's recommendations but in no case shall be less than:

8 x OD for armoured cables.

Cables shall be identified with durable, non-corrodible tags, of the Critchley K type or equivalent, inscribed with the reference number allocated in the cable schedules and fixed securely to the cable.

All cables shall be tagged as follows:

- a. At each termination.
- b. Where they enter and leave underground ducts.
- c. At each side of any barrier through which they run.
- d. Where they rise from one level to another.

All cores shall be terminated using approved crimped lugs of appropriate size. Spare cores shall be made off to unused terminals.

The cores of cables of section larger than 4mm² shall be connected by a means approved by the Engineer.



3.9.2 *Installation (Cont.)*

Cable joints shall not be used unless specified or on the written authority of the Engineer.

Cores shall be marked to comply with the references given in the cable schedules using Critchley Z type or equivalent. They shall be identified having black characters reading from the terminals outwards. Clip-on ferrules will not be accepted.

Insulated cables shall have standard compression type gland of the appropriate size. Particular ATEX certification requirements will be detailed on cable schedules.

Each gland shall be bonded to its cable armouring, where applicable and unless otherwise specified, and to be complete with earth tag and locknut.

Cables shall be protected against mechanical damage at vulnerable points. This particularly applies in exposed locations where cables emerge from ground or floor.

3.9.3 Cables in Ground

When excavating trenches for underground cables, due account shall be taken of ground conditions. Cables in normal ground shall be laid in trenches 500mm deep minimum unless agreed otherwise. Before any excavation starts, the Contractor shall check if there is any record of other underground services along the route.

Trench bottoms shall be cleared of irregular and sharp objects before applying bedding.

Cables shall be laid the appropriate distance apart (dictated by rating factors) on a bed of clean, dry, builders' sand, 75mm deep.

Cables shall be blinded with a similar layer as soon as possible after installation.

The trench shall be backfilled a further 150mm with riddled, excavated spoil.

Interlocking cable tiles or continuous marker tape, giving clear warning or danger, shall be placed over each cable or closely associated groups of cables.

Backfill to surface shall be allowed to settle before final topping and grading.

Approved route markers shall be installed where cables enter or leave buildings, at changes of direction and at appropriate intermediate intervals.

Pilot cables shall run continuously with their associated main cable, where the route is common.



3.10 CABLE SUPPORTS

3.10.1 Cable Ladder

Cable ladder should be installed as required in this specification.

The ladder shall be Swift type which is Hot Dip Galvanised to BS729:1971.

Standard metric widths shall be used.

Radius bends, tees, sets, reducers or other fittings shall be proprietary type by the ladder manufacturer and his installation instructions shall be followed. Earth Continuity connectors are to be fitted to all racking.

It shall be the contractors responsibility to provide the main supports for the racks as well as the fixing of the racks to the main supports.

Non Standard fittings will only be allowed where expressly agreed.

Cables shall not be tiered more than two deep, in which case the larger should be nearer to the end of the ladder.

Ladders shall be supported over their full width and secured to each support.

All bolts, nuts or washers shall be metric and sheradised, plated or otherwise effectively protected against corrosion.

Excessive bolt projections which may make the removal of nuts at a later date difficult will not be accepted.

When fully loaded, no span shall have a sag detectable by the eye.

Ladder runs shall be completely erected before cable laying commences and any rags, burrs or raw edges suitable treated.



3.10.2 Cable Trays

Cable trays shall be heavy-duty pattern formed from galvanised sheet steel. The tray shall have side flanges not less than 25mm deep with returned edges and be coated fabrication. Material gauge shall be 1.5mm (16 SWG) minimum except that for tray widths less than 400mm, the gauge may be reduced subject to the flange depth and the approval of the engineer. Factory made tee sections and bends shall be used where possible.

The cutting of trays shall be kept to a minimum but where unavoidable, the edges shall be suitably treated. Fasteners shall not present any obstruction on the tray. Capacity amounting to 25% usable tray area shall be left spare.

For those portions of cable route where the cables are to be laid on cable tray, they shall be laid flat and straight and shall be properly dressed into position and fastened to the tray at intervals not greater than 500mm. Where the tray is run horizontally but arranged in the vertical plane, fastener spacing shall be as detailed in the IEE Regulations. Care shall be taken to space the cables to allow adequate cooling in accordance with the IEE Wiring Regulations and not more than two layers of cables shall be run on one tray.

3.10.3 Channel

"Unistrut" type channel may be used for individual cable runs. Where cables are installed in the channel, capping is to be fitted. The channel and capping are to be of the galvanised type.

Where channel is to be used it must be with the approval of the Engineer.

3.10.4 Routes

Specific routing will be influenced by local circumstances.

Final details of all routes shall also be agreed with the Engineer before commencing pulling.

In all cases particular attention shall be paid to installation to as to prevent:

- a. Cable support fixings adversely affecting the strength of structures to which they are attached.
- b. Cable routes fouling access to other equipment and plant areas.
- c. Cables being at risk of damage caused by normal circumstances.



3.11 Testing and Commissioning

3.11.1 Testing

On completion of any installation work the Contractor shall carry out tests to ensure that it has been correctly executed and is safe to commission. This section provides a guide to the minimum normal requirements. Additional or special testing of particular equipment or components may be necessary and if so shall be carried out in accordance with any applicable instructions or recommendations.

On completion of the installation, an inspection of hazardous area equipment is to be conducted as detailed in EN60079-17 Type: Initial, Grade: Detailed. All results are to be fully recorded. These tests must be carried out by a CompEx or equivalent certified person.

Safety Procedures, for any tests which may involve danger to personnel, the Contractor shall 'tape off' the area and display warning notices.

Earth Tests, as soon as possible after establishment, the value of the plant earth(s) shall be measured, preferably using an instrument specifically for this purpose. Tests shall preferably be carried out in dry weather.

Continuity of all earth paths shall be checked, loop impedance values shall be measured and recorded for all or sample circuits at the discretion of the Engineer. Any sample testing shall involve circuits furthest from the point of supply.

Insulation Tests, insulation tests shall be carried out on all cables and equipment using a 'Megger' of appropriate voltage. Low voltage devices (e.g. electronic circuitry) which could suffer damage thereby, shall be disconnected prior to testing.

Di-electric tests on insulating oil shall be carried out only if required by the Engineer.

Pressure Tests, it may be assumed that pressure testing (over-potential) of equipment will have taken place at works prior to despatch and need be repeated only if required by the Engineer.

In general and unless expressly excluded, all HV cables shall undergo a site pressure test prior to energising.

Injection Tests, injection tests on protective relays shall be carried out at the discretion of the Engineer.

Phase Rotation, supplies to principle load centres shall be checked for correct phase rotation.



3.11.1 *Testing (Cont.)*

Rotating Machines, all motors shall be 'jogged' on agreement with the Engineer, for direction then run on light load (with overload relays set low) to check for noise and vibration. Any drain plugs shall be removed to check for condensation, then replaced.

Lighting Levels, illumination levels shall be measured against specification in the absence of daylight.

Noise Levels, will not normally require measuring unless required by the Engineer.

Witnessing, the Contractor shall give reasonable notice of testing to the Engineer who may wish to witness same.

Records, all test results shall be recorded.

3.11.2 Commissioning

Electrical

The installation shall be pre-commissioned by carrying out full functional tests at rated voltages.

These operations will normally be carried out jointly by the Engineer and the Contractor and will include:-

Prolonged running of rotating machines (on load if possible) to check for smooth operation and temperature rise. During these tests the Contractor shall check metered currents, where applicable, and set overload relays and ammeter markers to suit conditions.

Active tests on all circuits to ensure that all components are operating correctly.

Sequence tests on all circuits to prove interlock and alarm features.

If required by the Engineer, the Contractor shall provide qualified assistance on a standby basis during full plant commissioning under process conditions.

Rates would be agreed in advance, in this event.



APPENDIX I

Applicable Standards

Specifications and Codes of Practice of the BSI

Regulations under the Electricity Acts

Requirements of HM Factory Inspectorate

Any applicable requirements of other National or Local Authorities

Simon Storage Safety Regulations for Contractors

Simon Storage General Conditions of Contract. (Latest Edition)

The Contractor is to request a copy of Simon Storage Regulations and Conditions of contract if not already in possession.

British Standard EN60079-14 Electrical Installation in hazardous areas.

British Standard EN60079-17 Inspection and Maintenance of electrical installations in hazardous areas.

British Standard BS7671:2008 Requirements for Electrical Installations (IEE Wiring Regulations 17th Edition)



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SIMON STORAGE

ISCo EAST TERMINAL

No.7 SWITCHROOM (Ex No.3 PUMPHOUSE)

MCC POWER SUPPLY

INSTALLATION TENDER

Rev	Date	By	Checked	Approved	Description	Client Ref.
A	22.02.13	M. Morgan	P. Potter	MM	Issued for Tender	Document No. SI451002_INS
B	25.02.13	M. Morgan	P. Potter	MM	Crash Stop Interface Added	

IF NOT SIGNED THIS DOCUMENT IS UNCONTROLLED

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Revision History

- Revision A – Issue for tender.
- Revision B – Sections 4.2.3 & 4.2.4 Added (Crash Stop)



1 INSTRUCTIONS TO TENDERERS

1.1 Introduction

This document details the scope of work to provide power supplies from the LV switchboard to the recently installed MCC1 and MCC2 within the new No.7 switchroom (formerly No.3 Pumphouse) at ISCo East Terminal. It is to be read in conjunction with specification SI003001_INS - Standard Specification for Instrument & Electrical Installations (available on request)

The Tender shall be in respect of the proposed works and shall be completed and submitted strictly in accordance with these instructions to tenderers.

1.2 Date, Time and Mode of Delivery

The completed tender packages together with any covering letter and with the remainder of the containing document all in originally bound form (taking account of additions/omissions, etc., notified in writing during the tender period) together with other requirements, shall be submitted by the time stated in the purchaser's letter of invitation to tender.

The envelope must not be marked nor delivered in any way which might disclose the identity of the tenderer.

1.3 Alterations of Tender Documents

No authorised alteration shall be made in the Tender or the accompanying documents.

1.4 Enquiries to be Made Concerning the Tender

Any query in connection with the tender shall be submitted to:-

Mr Martin Morgan
P & I Design Limited
2 Reed Street
Gladstone Industrial Estate
Thornaby.
Tel: (01642) 617444
Fax: (01642) 616447
mm@pidesign.co.uk

A site visit is required to ensure that the work associated with this project is fully understood. The site visit is to be organised by contacting Martin Morgan at P & I Design Ltd.



1.5 Sufficiency of Tender

Before submitting a tender the tenderer should obtain all information, familiarise himself with means of access, location, extent and nature of the site, extent and nature of the services to be provided, conditions under which the services and works will be carried out, conditions affecting supply of staff and labour and any other matters which may affect his tender. applications for costs etc. on the ground of lack of knowledge in any respect of the aforementioned will be refused.

1.6 Confidentiality

The particulars of this document and any tender submitted in respect hereof are private and confidential and shall not be used for any purpose other than the proposed contract. In the event of a tender not being submitted or accepted all documents and drawings shall be returned to the person named in Clause 4 of these instructions to tenderers.

1.7 Contravention of Tender Requirements

Contravention of any of the requirements of these instructions to tenderers with regard to tendering shall render any tender concerned liable to disqualification at the sole discretion of Simon Storage Ltd.

1.8 Contract Agreement

The contractor shall, when called upon, enter into and execute a contract agreement.

1.9 Information to be Supplied by the Purchaser

In addition to the information to be provided by the purchaser prior to the contract award the tenderer shall attach a schedule of any further information which may be required from the purchaser, together with a programme indicating when it will be required.

1.10 Tender Price

The contractor shall make his tender open for acceptance for a period of one month from date of receipt by the Purchaser.



2 GENERAL REQUIREMENTS

Detailed in document SI003001_INS - Standard Specification for Instrument & Electrical Installation Section 2 with the following additional information -

A “For Construction” drawing package will be issued prior to contract. Modifications from the “For Tender” package will be highlighted.

The contractor is to supply details of labour usage to complete the installation within the programme. The contractor shall also supply day rate costs.

Normal site working hours 8.00am to 4.00pm Monday to Friday.

Section 2.4 - Installation

All access requirements will be included within the contractor’s Scope of Work.



3 METHODS OF WORK AND MATERIALS

Detailed in document SI003001_INS - Standard Specification for Instrument & Electrical Installation Section 3 with the following additional information -

Section 3.11.1 – Testing

No commissioning will commence until handover of cable test certificates and CompEx inspections (where necessary) by the contractor. The contractor will be responsible for providing installation handover to the engineer in good time to progress the commissioning programme.

Section 3.11.2 – Commissioning

The contractor will not power any equipment without the consent of the engineer. The contractor will not be required to carry out commissioning. However, he should be available to carry out any remedial works during commissioning.



4 SCOPE OF WORK

The scope of work is as detailed in the following sections and as shown on the documentation listed below.

Cable Schedule SI451002_SCH Rev B

4.1 Switchroom Containment

Switchroom containment was installed under a previous scope of work (SI451001_INS), therefore only small local containment should be necessary under this scope, if at all.

4.2 Switchroom Cabling

4.2.1 MCC 1 Supply

Install cabling from LV board section C3 to MCC1

4.2.2 MCC 2 Supply

Install cabling from LV board section C4 to MCC2

4.2.3 Crash Stop (MCC 1)

Install cabling from Local Crash Stop Node to MCC 1

4.2.4 Crash Stop (MCC 2)

Install cabling from Local Crash Stop Node to MCC 2

4.3 Contractor Supplied Equipment

None

4.4 Free Issue Equipment

None



5 CONTRACT PRICING CONTENTS

5.1 Introduction

The Tenderer must complete the Schedules attached in Sections 5.3.4 & 6 completing the lists of categories of unit rates for variations. The Tenderer must not re-type or make any other alterations to the wording.

Engineer authorised variations in respect of the provision of the aforementioned services to be paid in accordance with Section 5.3.4.

Payment under hourly/day rates for variations to Contract will only be made to the Contractor for Personnel approved by the Purchaser and will only be made in respect of all approved hours worked, or pro-rata to the nearest half hour, half day or whole day respectively.

5.2 Pricing Preambles/Notes on Pricing

5.2.1 General

These Pricing Preambles relate to Rates, Sums and Amounts entered in Schedules which form part of the Contract.

In arriving at said Rates, Sums and Amounts, the Contractor will be deemed to have taken account of the Conditions of Contract, the Specification/Scope of Work, the Particular Specification, these Pricing Preambles and any other matters which affects said Rates, Sums and Amounts.

Rates, Sums and Amounts, except where otherwise provided in the Contract shall be fixed for the duration of the Contract.

Completion of Lump Sums, Normal Time Rates.

- 5.2.1.1** A Rate, Sum or Amount shall be entered by the Contractor against each reference or item and reference or items against which no Rate, Sum or Amount is entered shall be deemed to be covered by other Rates, Sums or Amounts entered elsewhere in the Schedules.
- 5.2.1.2** The Contractor shall omit from his Tender any Value Added Tax chargeable or any taxable supplies made under Contract to the Purchaser and payable by him as a taxable person to the Commissioners of Customs and Excise.
- 5.2.1.3** The Contractor shall allow for compliance in all respects with the applicable British Standard, Codes of Practice and any other Standards or Codes specified. The Contractor shall be fully responsible for obtaining such documents and familiarising himself with same.
- 5.2.1.4** The Contractor shall allow for compliance with all statutory safety regulations, including those of the Purchaser, and executing the Services in such an order or sequence as may be required to accord with the overall Project programme requirements.



5.3 Schedule of Rates

5.3.1 General

5.3.1.1 Schedule of Rates

A schedule of rates is to accompany the tender.

5.3.1.2 Man-hours

The Man-hour Rates which the Contractor inserts in the Schedule shall be deemed to include, but not necessarily be restricted to all allowances required for the following:

All cost associated with the employment of labour including the requirements of Government enactment's (V.A.T. excepted) and/or other suitable National Working Rule Agreement.

Supervision by non-working trade supervisors, other than those allowed separately by the Contractor in the General Preliminaries section of the Tender.

All man-hours and costs associated with collecting "Free Issue" materials from the Purchaser's stores or compounds and transporting to the Contractor's store or workshop, including all loading, unloading, stacking and storage. Also any costs associated with off-loading, stacking and storage of materials supplied by the Contractor. Compilation of stores record system and final reconciliation for all "Free Issue" materials. Generally this store will be located on the site.

Loading and transporting from the Contractor's store or compound and assembling and installing in the final position.

The installation of all work and operations required by the Specifications and Works Rules and Regulations.

The carrying out of any tests including submission of samples where required. Any necessary site measurement and sketching for fabrication and erection purposes.

Marking up construction drawings to record the "As Built" installation.

All necessary allowances for small hand tools and consumables which are not included as Constructional Plant in the General Preliminaries section of the Tender.

Protecting the works during construction period from damage and for making good /reinstating damage caused.

All required allowances for overhead and profit.



5.3.2 Materials

The material prices which the Contractor inserts in the Schedule of Rates shall be deemed to include the following:-

All costs associated with delivery to the Contractor's site stores or compound.

Any demurrage charges or costs associated with returning packing cases, drums and the like for materials supplied by the Contractor.

All necessary allowances for waste.

All necessary allowances for consumables.

All necessary fixing devices.

5.3.3 Testing

The man-hour rates shall include for all testing.

5.3.4 Schedule of Day work Rates

Variations shall be valued on a lump sum basis. Such lump sums shall be derived from the Schedule of Rates below and the man-hour estimates for the variations which the Engineer has agreed in writing and all of which shall be subject to the issue of a Variation Order.

Position	40 Hour Rate	Time & ½ Rate	Double Time
Site Supervision			
Working Foreman			
CompEx Approved Technician			
Approved Electrician			
Electrician			
Labourer			

Percentage to be added to net cost of materials %

Site Establishment

Cost inclusive of site management, office facilities, £
 messing, toilets and constructional equipment at a weekly rate.



5.4 Programme

5.4.1 Provisional Programme

The following information is supplied for the guidance of the Tenderer and is provisional only, based upon the information available at the time of issue of the Tender:

- i Site visit – By arrangement
- ii. Tender required by – 01.03.13
- iii. Earliest date on which work can commence – Immediately
- iv. Latest date for completion, including all testing – TBA ISCo Engineer

The tenderer shall include a provisional programme with the tender to include key milestones for delivery of equipment within their supply.



6. Tender Pricing Summary

This tender summary to be completed by the tenderer

4.3.1 - Supply and installation of cabling MCC 1 £

4.3.2 - Supply and installation of cabling MCC 2 £

Testing and Documentation £

Miscellaneous (Please State) £

Sub Total £

Site Establishment Total (based on weeks) £
(See Section 5.3.4)

Total Tender Price £



Appendix I

Schedules

SI451002_SCH Rev B – Cable Schedule





INSTRUMENT/ELECTRICAL CABLE SCHEDULE

CABLE		CONDUCTORS		CABLE ROUTE				APPROX. LENGTH METRES	REMARKS
REFERENCE	TYPE	AREA mm ²	No.	FROM	GLAND TYPE	TO	GLAND TYPE		
P70017	J04	185.0	4 Core	LV Board Compartment C3 (630A)	ATEX II 2 G EExed	MCC 1 Incomer	ATEX II 2 G EExed	10	Cables in Parallel
P70018	J04	185.0	4 Core	LV Board Compartment C3 (630A)	ATEX II 2 G EExed	MCC 1 Incomer	ATEX II 2 G EExed	10	
P70019	J04	185.0	4 Core	LV Board Compartment C4 (630A)	ATEX II 2 G EExed	MCC 2 Incomer	ATEX II 2 G EExed	10	Cables in Parallel
P70020	J04	185.0	4 Core	LV Board Compartment C4 (630A)	ATEX II 2 G EExed	MCC 2 Incomer	ATEX II 2 G EExed	10	
E70021	J01	95.0	1 Core	LV Board Earth Bar	ATEX II 2 G EExed	MCC1 Earth Bar	ATEX II 2 G EExed	10	Green/Yellow Outer Sheath
E70022	J01	95.0	1 Core	LV Board Earth Bar	ATEX II 2 G EExed	MCC2 Earth Bar	ATEX II 2 G EExed	10	Green/Yellow Outer Sheath
C70023	J02	1.5	2 Core	Crash Stop Node	ATEX II 2 G EExed	MCC 1 Crash Stop Compartment	ATEX II 2 G EExed	30	
C70024	J02	1.5	2 Core	Crash Stop Node	ATEX II 2 G EExed	MCC 2 Crash Stop Compartment	ATEX II 2 G EExed	30	
70025									Spare - Issued by SW
70026									Spare - Issued by SW
70027									Spare - Issued by SW
70028									Spare - Issued by SW
70029									Spare - Issued by SW
							TOTAL	120	

NOTES:
1) Refer to P&I Design Cable Specifications for details on Cable Type.

- Denotes Cable Modified
- Denotes Cable Deleted
- Denotes Cable Added
- Future Cables

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REV	DATE	BY	DRN	CHK'D	APP'D	DESCRIPTION	
A	22.02.13	MM	MM	PJP	PJP	MM	MM
B	25.02.13	MM	MM	PP		MM	MM

PLANT	Immingham Storage Co. - East Terminal
TITLE	No. 7 Switchroom - Cable Schedule
	
	
CLIENT DRG No	SHEET 1 OF 1
	REF No. SI451002_SCH

Appendix II

Cable Specifications

Type 'J'



TYPE	J
DESCRIPTION	XLPE Insulated Power Cable - Armoured
MANUFACTURING SPECIFICATION	BS5467
SERVICE	Power Distribution / Control (Max. 440V ac.)
VOLTAGE	600/1000V.
CONDUCTORS	Stranded Copper
INSULATION	XLPE (Cross Linked Polyethylene)
CORE COLOUR CODE	1 core Brown 2 cores Brown, Blue 3 cores Brown, Black, Grey 4 cores Brown, Black, Grey, Blue 5 cores Brown, Black, Grey, Blue, Green/Yellow 7 cores } 12 cores White insulation with core number indelibly marked at 19 cores regular maximum intervals of 50mm 27 cores } 37 cores 48 cores }
SHEATH	Black PVC
ARMOUR BEDDING	PVC
ARMOUR	Single Core - Aluminium Wire Multi Core - Galvanised Steel Wire
NOTES	The cable type shall be followed by a number that defines the number of cores within a given cable. e.g. J12 indicates a twelve core type J cable.

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Revision History

Revision A – Issue for tender.



1 INSTRUCTIONS TO TENDERERS

1.1 Introduction

This scope of work forms part of the work scope involved in moving loads from old boards within No.3 Pumphouse onto new MCC(s) in the newly formed switchroom to be known as No.7 Switchroom. This scope of work is restricted to moving loads from the existing Board that is fed from fused switch 'AC' in No.3 Switchroom. This existing board is located in the northern end of No.3 pumphouse within the area now known as No.7 switchroom.

This tender is to be read in conjunction with specification SI003001_INS - Standard Specification for Instrument & Electrical Installations (available on request)

The Tender shall be in respect of the proposed works and shall be completed and submitted strictly in accordance with these instructions to tenderers.

1.2 Date, Time and Mode of Delivery

The completed tender packages together with any covering letter and with the remainder of the containing document all in originally bound form (taking account of additions/omissions, etc., notified in writing during the tender period) together with other requirements, shall be submitted by the time stated in the purchaser's letter of invitation to tender.

The envelope must not be marked nor delivered in any way which might disclose the identity of the tenderer.

1.3 Alterations of Tender Documents

No authorised alteration shall be made in the Tender or the accompanying documents.

1.4 Enquiries to be Made Concerning the Tender

Any query in connection with the tender shall be submitted to:-

Mr Martin Morgan
P & I Design Limited
2 Reed Street
Gladstone Industrial Estate
Thornaby.
Tel: (01642) 617444
Fax: (01642) 616447
mm@pidesign.co.uk

A site visit is required to ensure that the work associated with this project is fully understood. The site visit is to be organised by contacting Martin Morgan at P & I Design Ltd.



1.5 Sufficiency of Tender

Before submitting a tender the tenderer should obtain all information, familiarise himself with means of access, location, extent and nature of the site, extent and nature of the services to be provided, conditions under which the services and works will be carried out, conditions affecting supply of staff and labour and any other matters which may affect his tender. applications for costs etc. on the ground of lack of knowledge in any respect of the aforementioned will be refused.

1.6 Confidentiality

The particulars of this document and any tender submitted in respect hereof are private and confidential and shall not be used for any purpose other than the proposed contract. In the event of a tender not being submitted or accepted all documents and drawings shall be returned to the person named in Clause 4 of these instructions to tenderers.

1.7 Contravention of Tender Requirements

Contravention of any of the requirements of these instructions to tenderers with regard to tendering shall render any tender concerned liable to disqualification at the sole discretion of Simon Storage Ltd.

1.8 Contract Agreement

The contractor shall, when called upon, enter into and execute a contract agreement.

1.9 Information to be Supplied by the Purchaser

In addition to the information to be provided by the purchaser prior to the contract award the tenderer shall attach a schedule of any further information which may be required from the purchaser, together with a programme indicating when it will be required.

1.10 Tender Price

The contractor shall make his tender open for acceptance for a period of one month from date of receipt by the Purchaser.



2 GENERAL REQUIREMENTS

Detailed in document SI003001_INS - Standard Specification for Instrument & Electrical Installation Section 2 with the following additional information -

A “For Construction” drawing package will be issued prior to contract. Modifications from the “For Tender” package will be highlighted.

The contractor is to supply details of labour usage to complete the installation within the programme. The contractor shall also supply day rate costs.

Normal site working hours 8.00am to 4.00pm Monday to Friday.

Section 2.4 - Installation

All access requirements will be included within the contractor’s Scope of Work.



3 METHODS OF WORK AND MATERIALS

Detailed in document SI003001_INS - Standard Specification for Instrument & Electrical Installation Section 3 with the following additional information -

Section 3.11.1 – Testing

No commissioning will commence until handover of cable test certificates and CompEx inspections (where necessary) by the contractor. The contractor will be responsible for providing installation handover to the engineer in good time to progress the commissioning programme.

Section 3.11.2 – Commissioning

The contractor will not power any equipment without the consent of the engineer. The contractor will not be required to carry out commissioning. However, he should be available to carry out any remedial works during commissioning.



4 SCOPE OF WORK

The scope of work is as detailed in the following sections and as shown on the documentation listed below.

Cable Schedule SI451003_SCH Rev A

4.1 Switchroom Containment

Switchroom containment was installed under a previous scope of work (SI451001_INS), therefore only small local containment should be necessary under this scope, if at all.

4.2 MCC 2 Power Supply

The provision of a power supply to MCC 2 from the LV Switchboard within No.7 switchroom is the subject of a separate scope of work (SI451002_INS). It should be noted that any element of this scope of work that involves relocating existing cabling to the new MCC cannot be started until the power supply has been established. Any scope element that involves the provision of new cabling could be completed in preparation independently of other work scopes.

4.3 General

4.3.1 Control Voltage

The control supply voltage in MCC2 is 24Vdc. The existing board 'AC' control supply voltage is 240Vac. The contractor shall include to replace any equipment that does not conform with the new 24vdc control voltage, in particular control station lamps shall be assessed.

4.3.2 Cable Length

Under the individual drive cabling below, it is indicated if the existing cabling is to be pulled back to MCC 2 or replaced. If where indicated to be pulled back it is found that the cable is of inadequate length then it shall be discussed with the engineer as how to proceed. This shall be established prior to disconnecting from the existing board.



4.4 Cabling (Ex Board AC)

The following drives are to be relocated to the new MCC 2

- P3-8
- P3-9
- P3-14
- C3-32

4.4.1 P3-8

Existing ISCo Drg. Ref.
New P&I Design Drg. Ref.

SPW-95-214 Rev. 1
SI451060_DWG Rev A

- Control cabling as listed below to be pulled back from existing board and terminated to MCC 2 as shown on P&I Drg.
 - C30315
 - C30316
 - C30317
- Drive cable to be replaced as shown on cable schedule.
- Cables that will become redundant to be isolated and removed
 - P30313 (Power supply to starter panel)
 - C30318 (Crash stop panel)

4.4.2 P3-9

Existing ISCo Drg. Ref.
New P&I Design Drg. Ref.

SPW-95-215 Rev. 1
SI451061_DWG Rev A

- Control cabling as listed below to be pulled back from existing board and terminated to MCC 2 as shown on P&I Drg.
 - C30325
 - C30326
 - C30327
- Drive cable to be replaced as shown on cable schedule.
- Cables that will become redundant to be isolated and removed
 - P30323 (Power supply to starter panel)
 - C30328 (Crash stop panel)



4.4.3 P3-14

Existing ISCo Drg. Ref.
New P&I Design Drg. Ref.

SPW-07-796 Rev. 1
SI451065_DWG Rev A

- Control cabling as listed below to be pulled back from existing board and terminated to MCC 2 as shown on P&I Drg.
 - C30642
- Drive cable to be pulled back from existing board and terminated to MCC 2 as shown on P&I Drg.
- Cables that will become redundant to be isolated and removed
 - P30640 (Power supply to starter panel)
 - C30644 (Crash stop panel)

4.4.4 C3-32

Existing ISCo Drg. Ref.
New P&I Design Drg. Ref.

n/a
n/a

- Drive cable to be replaced as shown on cable schedule.



4.5 Cabling (Ex existing No.7 Switchroom)

The following drives and loads are to be relocated to the new MCC 2

- P9-1
- P9-2
- P9-3
- P9-9
- P9-11

4.5.1 General

Control cabling to the following drives is on shared multicore cables, therefore all drives will require re-locating at the same time, this will require co-ordination with site operations and an indication of a required shutdown period shall be provided with the tender.

- Control cabling as listed below to be pulled back from existing board and terminated to MCC 2 as shown on P&I Drg.
 - C90015 (To JB 9/2)
 - C90009 (To JB 9/5)
 - P90011 (To Earthing system)
- Cables that will become redundant to be isolated and removed
 - P90001 (Power supply to No.7 Switchroom Panel)

4.5.2 P9-1

Existing ISCo Drg. Ref.
New P&I Design Drg. Ref.

SPW-03-672 Rev. 1
SI451068_DWG Rev A

- Drive cable to be pulled back from existing board and terminated to MCC 2 as shown on P&I Drg.

4.5.3 P9-2

Existing ISCo Drg. Ref.
New P&I Design Drg. Ref.

Unknown
SI451069_DWG Rev A

- Drive cable to be pulled back from existing board and terminated to MCC 2 as shown on P&I Drg.

4.5.4 P9-3

Existing ISCo Drg. Ref.
New P&I Design Drg. Ref.

Unknown
SI451070_DWG Rev A

- Drive cable to be pulled back from existing board and terminated to MCC 2 as shown on P&I Drg.



4.5.5 P9-9

Existing ISCo Drg. Ref.
New P&I Design Drg. Ref.

SPW-03-675
SI451071_DWG Rev A

- Control cabling as listed below to be pulled back from existing board and terminated to MCC 2 as shown on P&I Drg.
 - C90060 (To dry run probe)
- Drive cable to be pulled back from existing board and terminated to MCC 2 as shown on P&I Drg.

4.5.6 P9-11

Existing ISCo Drg. Ref.
New P&I Design Drg. Ref.

SPW-03-676
SI451072_DWG Rev A

- Control cabling as listed below to be pulled back from existing board and terminated to MCC 2 as shown on P&I Drg.
 - C90060 (To dry run probe)
- Drive cable to be replaced as shown on cable schedule.

4.6 **Contractor Supplied Equipment**

Replacement S/S/R stations as necessary

4.7 **Free Issue Equipment**

None



5 CONTRACT PRICING CONTENTS

5.1 Introduction

The Tenderer must complete the Schedules attached in Sections 5.3.4 & 6 completing the lists of categories of unit rates for variations. The Tenderer must not re-type or make any other alterations to the wording.

Engineer authorised variations in respect of the provision of the aforementioned services to be paid in accordance with Section 5.3.4.

Payment under hourly/day rates for variations to Contract will only be made to the Contractor for Personnel approved by the Purchaser and will only be made in respect of all approved hours worked, or pro-rata to the nearest half hour, half day or whole day respectively.

5.2 Pricing Preambles/Notes on Pricing

5.2.1 General

These Pricing Preambles relate to Rates, Sums and Amounts entered in Schedules which form part of the Contract.

In arriving at said Rates, Sums and Amounts, the Contractor will be deemed to have taken account of the Conditions of Contract, the Specification/Scope of Work, the Particular Specification, these Pricing Preambles and any other matters which affects said Rates, Sums and Amounts.

Rates, Sums and Amounts, except where otherwise provided in the Contract shall be fixed for the duration of the Contract.

Completion of Lump Sums, Normal Time Rates.

- 5.2.1.1** A Rate, Sum or Amount shall be entered by the Contractor against each reference or item and reference or items against which no Rate, Sum or Amount is entered shall be deemed to be covered by other Rates, Sums or Amounts entered elsewhere in the Schedules.
- 5.2.1.2** The Contractor shall omit from his Tender any Value Added Tax chargeable or any taxable supplies made under Contract to the Purchaser and payable by him as a taxable person to the Commissioners of Customs and Excise.
- 5.2.1.3** The Contractor shall allow for compliance in all respects with the applicable British Standard, Codes of Practice and any other Standards or Codes specified. The Contractor shall be fully responsible for obtaining such documents and familiarising himself with same.
- 5.2.1.4** The Contractor shall allow for compliance with all statutory safety regulations, including those of the Purchaser, and executing the Services in such an order or sequence as may be required to accord with the overall Project programme requirements.



5.3 Schedule of Rates

5.3.1 General

5.3.1.1 Schedule of Rates

A schedule of rates is to accompany the tender.

5.3.1.2 Man-hours

The Man-hour Rates which the Contractor inserts in the Schedule shall be deemed to include, but not necessarily be restricted to all allowances required for the following:

All cost associated with the employment of labour including the requirements of Government enactment's (V.A.T. excepted) and/or other suitable National Working Rule Agreement.

Supervision by non-working trade supervisors, other than those allowed separately by the Contractor in the General Preliminaries section of the Tender.

All man-hours and costs associated with collecting "Free Issue" materials from the Purchaser's stores or compounds and transporting to the Contractor's store or workshop, including all loading, unloading, stacking and storage. Also any costs associated with off-loading, stacking and storage of materials supplied by the Contractor. Compilation of stores record system and final reconciliation for all "Free Issue" materials. Generally this store will be located on the site.

Loading and transporting from the Contractor's store or compound and assembling and installing in the final position.

The installation of all work and operations required by the Specifications and Works Rules and Regulations.

The carrying out of any tests including submission of samples where required. Any necessary site measurement and sketching for fabrication and erection purposes.

Marking up construction drawings to record the "As Built" installation.

All necessary allowances for small hand tools and consumables which are not included as Constructional Plant in the General Preliminaries section of the Tender.

Protecting the works during construction period from damage and for making good /reinstating damage caused.

All required allowances for overhead and profit.



5.3.2 Materials

The material prices which the Contractor inserts in the Schedule of Rates shall be deemed to include the following:-

All costs associated with delivery to the Contractor's site stores or compound.

Any demurrage charges or costs associated with returning packing cases, drums and the like for materials supplied by the Contractor.

All necessary allowances for waste.

All necessary allowances for consumables.

All necessary fixing devices.

5.3.3 Testing

The man-hour rates shall include for all testing.

5.3.4 Schedule of Day work Rates

Variations shall be valued on a lump sum basis. Such lump sums shall be derived from the Schedule of Rates below and the man-hour estimates for the variations which the Engineer has agreed in writing and all of which shall be subject to the issue of a Variation Order.

Position	40 Hour Rate	Time & ½ Rate	Double Time
Site Supervision			
Working Foreman			
CompEx Approved Technician			
Approved Electrician			
Electrician			
Labourer			

Percentage to be added to net cost of materials %

Site Establishment

Cost inclusive of site management, office facilities, £
 messing, toilets and constructional equipment at a weekly rate.



5.4 Programme

5.4.1 Provisional Programme

The following information is supplied for the guidance of the Tenderer and is provisional only, based upon the information available at the time of issue of the Tender:

- i Site visit – By arrangement
- ii. Tender required by – 01.03.13
- iii. Earliest date on which work can commence – Immediately
- iv. Latest date for completion, including all testing – TBA ISCo Engineer

The tenderer shall include a provisional programme with the tender to include key milestones for delivery of equipment within their supply.



6. Tender Pricing Summary

This tender summary to be completed by the tenderer

4.4 - Supply and installation of cabling £

4.5 - Supply and installation of cabling £

4.6 - Supply of equipment £

Testing and Documentation £

Miscellaneous (Please State) £

Sub Total £

Site Establishment Total (based on weeks) £
(See Section 5.3.4)

Total Tender Price £



Appendix I

Schedules

SI451003_SCH Rev A – Cable Schedule



INSTRUMENT/ELECTRICAL CABLE SCHEDULE

CABLE		CONDUCTORS		CABLE ROUTE				APPROX. LENGTH METRES	REMARKS
REFERENCE	TYPE	AREA mm ²	No.	FROM	GLAND TYPE	TO	GLAND TYPE		
M30314	J04	70.0	4 Core	MCC 2	ATEX II 2 G EExed	P3-8	ATEX II 2 G EExed	50	
M30324	J04	70.0	4 Core	MCC 2	ATEX II 2 G EExed	P3-9	ATEX II 2 G EExed	45	
M90024	J04	25.0	4 Core	MCC 2	ATEX II 2 G EExed	P9-11	ATEX II 2 G EExed	125	
P30214	J04	35.0	4 Core	MCC 2	ATEX II 2 G EExed	C3-32	ATEX II 2 G EExed	20	
							TOTAL	240	


NOTES:
1) Refer to P&I Design Cable Specifications for details on Cable Type.

- Denotes Cable Modified
- Denotes Cable Deleted
- Denotes Cable Added
- Future Cables

IF NOT SIGNED THIS DOCUMENT IS UNCONTROLLED									
REV	DATE	BY	DRN	CHK'D	APP'D	DESCRIPTION	PLANT	TITLE	
A	22.02.13	MM	MM	PJP	MM	Issued For Construction	Immingham Storage Co. - East Terminal	No. 7 Switchroom - MCC 2 Cable Schedule	



bulk liquid & gas network



SHEET 1 OF 1

CLIENT DRG No REF No. SI451003_SCH

Appendix II

Cable Specifications

Type 'J'



TYPE	J
DESCRIPTION	XLPE Insulated Power Cable - Armoured
MANUFACTURING SPECIFICATION	BS5467
SERVICE	Power Distribution / Control (Max. 440V ac.)
VOLTAGE	600/1000V.
CONDUCTORS	Stranded Copper
INSULATION	XLPE (Cross Linked Polyethylene)
CORE COLOUR CODE	1 core Brown 2 cores Brown, Blue 3 cores Brown, Black, Grey 4 cores Brown, Black, Grey, Blue 5 cores Brown, Black, Grey, Blue, Green/Yellow 7 cores } 12 cores White insulation with core number indelibly marked at 19 cores regular maximum intervals of 50mm 27 cores } 37 cores 48 cores }
SHEATH	Black PVC
ARMOUR BEDDING	PVC
ARMOUR	Single Core - Aluminium Wire Multi Core - Galvanised Steel Wire
NOTES	The cable type shall be followed by a number that defines the number of cores within a given cable. e.g. J12 indicates a twelve core type J cable.

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- 1 INTRODUCTION
- 2 GENERAL REQUIREMENTS
- 3 METHODS OF WORK AND MATERIALS
- 4 SCOPE OF WORK
 - 4.1 Switchroom Containment
 - 4.2 MCC 1 Power Supply
 - 4.3 General
 - 4.4 Cabling (Ex Board EE)
 - 4.5 Contractor Supplied Equipment
 - 4.6 Free Issue Equipment
- 5 CONTRACT PRICING CONTENTS
 - 5.1 Introduction Contractor Supplied Equipment
 - 5.2 Pricing Preambles/Notes on Pricing
 - 5.3 Schedule of Rates
 - 5.4 Programme
- 6 TENDER PRICING SUMMARY

APPENDIX

- I Schedules
- II Cable Specifications

Revision History

Revision A – Issue for tender.



1 INSTRUCTIONS TO TENDERERS

1.1 Introduction

This scope of work forms part of the work scope involved in moving loads from old boards within No.3 Pumphouse onto new MCC(s) in the newly formed switchroom to be known as No.7 Switchroom. This scope of work is restricted to moving loads from the existing Board that is fed from fused switch 'EE' in No.3 Switchroom. This existing board is located in the compressor house end of No.3 pumphouse.

This tender is to be read in conjunction with specification SI003001_INS - Standard Specification for Instrument & Electrical Installations (available on request)

The Tender shall be in respect of the proposed works and shall be completed and submitted strictly in accordance with these instructions to tenderers.

1.2 Date, Time and Mode of Delivery

The completed tender packages together with any covering letter and with the remainder of the containing document all in originally bound form (taking account of additions/omissions, etc., notified in writing during the tender period) together with other requirements, shall be submitted by the time stated in the purchaser's letter of invitation to tender.

The envelope must not be marked nor delivered in any way which might disclose the identity of the tenderer.

1.3 Alterations of Tender Documents

No authorised alteration shall be made in the Tender or the accompanying documents.

1.4 Enquiries to be Made Concerning the Tender

Any query in connection with the tender shall be submitted to:-

Mr Martin Morgan
P & I Design Limited
2 Reed Street
Gladstone Industrial Estate
Thornaby.
Tel: (01642) 617444
Fax: (01642) 616447
mm@pidesign.co.uk

A site visit is required to ensure that the work associated with this project is fully understood. The site visit is to be organised by contacting Martin Morgan at P & I Design Ltd.



1.5 Sufficiency of Tender

Before submitting a tender the tenderer should obtain all information, familiarise himself with means of access, location, extent and nature of the site, extent and nature of the services to be provided, conditions under which the services and works will be carried out, conditions affecting supply of staff and labour and any other matters which may affect his tender. applications for costs etc. on the ground of lack of knowledge in any respect of the aforementioned will be refused.

1.6 Confidentiality

The particulars of this document and any tender submitted in respect hereof are private and confidential and shall not be used for any purpose other than the proposed contract. In the event of a tender not being submitted or accepted all documents and drawings shall be returned to the person named in Clause 4 of these instructions to tenderers.

1.7 Contravention of Tender Requirements

Contravention of any of the requirements of these instructions to tenderers with regard to tendering shall render any tender concerned liable to disqualification at the sole discretion of Simon Storage Ltd.

1.8 Contract Agreement

The contractor shall, when called upon, enter into and execute a contract agreement.

1.9 Information to be Supplied by the Purchaser

In addition to the information to be provided by the purchaser prior to the contract award the tenderer shall attach a schedule of any further information which may be required from the purchaser, together with a programme indicating when it will be required.

1.10 Tender Price

The contractor shall make his tender open for acceptance for a period of one month from date of receipt by the Purchaser.



2 GENERAL REQUIREMENTS

Detailed in document SI003001_INS - Standard Specification for Instrument & Electrical Installation Section 2 with the following additional information -

A “For Construction” drawing package will be issued prior to contract. Modifications from the “For Tender” package will be highlighted.

The contractor is to supply details of labour usage to complete the installation within the programme. The contractor shall also supply day rate costs.

Normal site working hours 8.00am to 4.00pm Monday to Friday.

Section 2.4 - Installation

All access requirements will be included within the contractor’s Scope of Work.



3 METHODS OF WORK AND MATERIALS

Detailed in document SI003001_INS - Standard Specification for Instrument & Electrical Installation Section 3 with the following additional information -

Section 3.11.1 – Testing

No commissioning will commence until handover of cable test certificates and CompEx inspections (where necessary) by the contractor. The contractor will be responsible for providing installation handover to the engineer in good time to progress the commissioning programme.

Section 3.11.2 – Commissioning

The contractor will not power any equipment without the consent of the engineer. The contractor will not be required to carry out commissioning. However, he should be available to carry out any remedial works during commissioning.



4 SCOPE OF WORK

The scope of work is as detailed in the following sections and as shown on the documentation listed below.

Cable Schedule SI451004_SCH Rev A

4.1 Switchroom Containment

Switchroom containment was installed under a previous scope of work (SI451001_INS), therefore only small local containment should be necessary under this scope, if at all.

4.2 MCC 1 Power Supply

The provision of a power supply to MCC 1 from the LV Switchboard within No.7 switchroom is the subject of a separate scope of work (SI451002_INS). It should be noted that any element of this scope of work that involves relocating existing cabling to the new MCC cannot be started until the power supply has been established. Any scope element that involves the provision of new cabling could be completed in preparation independently of other work scopes.

4.3 General

4.3.1 Control Voltage

The control supply voltage in MCC1 is 24Vdc. The existing board 'EE' control supply voltage is 240Vac. The contractor shall include to replace any equipment that does not conform with the new 24vdc control voltage, in particular control station lamps shall be assessed.

4.3.2 Cable Length

Under the individual drive cabling below, it is indicated if the existing cabling is to be pulled back to MCC 1 or replaced. If where indicated to be pulled back it is found that the cable is of inadequate length then it shall be discussed with the engineer as how to proceed. This shall be established prior to disconnecting from the existing board.



4.4 Cabling (Ex Board EE)

The following drives are to be relocated to the new MCC 1

- P3-10
- P3-11
- P3-13
- P3-16
- P3-36
- C3-31

4.4.1 P3-10

Existing ISCo Drg. Ref.
New P&I Design Drg. Ref.

SPW-95-216 Rev. 1
SI451062_DWG Rev A

- Control cabling as listed below to be pulled back from existing board and terminated to MCC 1 as shown on P&I Drg.
 - C30079
 - C30080
- Jetty Stop interface cabling as listed below to either be pulled back from existing panel if long enough or replaced with new
 - C30078
- Drive cable to be replaced as shown on cable schedule.

4.4.2 P3-11

Existing ISCo Drg. Ref.
New P&I Design Drg. Ref.

SPW-98-415
SI451063_DWG Rev A

- Control cabling as listed below to be pulled back from existing board and terminated to MCC 1 as shown on P&I Drg.
 - C30909
- Jetty Stop interface cabling as listed below to either be pulled back from existing panel if long enough or replaced with new
 - C30939
- Drive cable to be replaced as shown on cable schedule.



4.4.3 P3-13

Existing ISCo Drg. Ref. SPW-98-397 Rev. 1
New P&I Design Drg. Ref. SI451064_DWG Rev A

- Control cabling as listed below to be pulled back from existing board and terminated to MCC 1 as shown on P&I Drg.
 - C30892
- Jetty Stop interface cabling as listed below to either be pulled back from existing panel if long enough or replaced with new
 - C30894
- Drive cables to be pulled back from existing board and terminated to MCC 1 as shown on P&I Drg. **Note : 2 x cables in parallel.**

4.4.4 P3-16

Existing ISCo Drg. Ref. SPW-07-845 Rev. 1
New P&I Design Drg. Ref. SI451066_DWG Rev A

- Control cabling as listed below to be pulled back from existing board and terminated to MCC 1 as shown on P&I Drg.
 - C30147
- Jetty Stop interface cabling as listed below to either be pulled back from existing panel if long enough or replaced with new
 - C30150
- Drive cable to be replaced as shown on cable schedule.

4.4.5 P3-36

Existing ISCo Drg. Ref. SPW-08-908 Rev. A
New P&I Design Drg. Ref. SI451067_DWG Rev A

- Control cabling as listed below to be pulled back from existing board and terminated to MCC 1 as shown on P&I Drg.
 - C30985
 - C30987
- Drive cable to be pulled back from existing board and terminated to MCC 1 as shown on P&I Drg.

4.4.6 C3-31

Existing ISCo Drg. Ref. n/a
New P&I Design Drg. Ref. n/a

- Drive cable to be replaced as shown on cable schedule.



4.5 Contractor Supplied Equipment

Replacement S/S/R stations as necessary

4.6 Free Issue Equipment

None



5 CONTRACT PRICING CONTENTS

5.1 Introduction

The Tenderer must complete the Schedules attached in Sections 5.3.4 & 6 completing the lists of categories of unit rates for variations. The Tenderer must not re-type or make any other alterations to the wording.

Engineer authorised variations in respect of the provision of the aforementioned services to be paid in accordance with Section 5.3.4.

Payment under hourly/day rates for variations to Contract will only be made to the Contractor for Personnel approved by the Purchaser and will only be made in respect of all approved hours worked, or pro-rata to the nearest half hour, half day or whole day respectively.

5.2 Pricing Preambles/Notes on Pricing

5.2.1 General

These Pricing Preambles relate to Rates, Sums and Amounts entered in Schedules which form part of the Contract.

In arriving at said Rates, Sums and Amounts, the Contractor will be deemed to have taken account of the Conditions of Contract, the Specification/Scope of Work, the Particular Specification, these Pricing Preambles and any other matters which affects said Rates, Sums and Amounts.

Rates, Sums and Amounts, except where otherwise provided in the Contract shall be fixed for the duration of the Contract.

Completion of Lump Sums, Normal Time Rates.

- 5.2.1.1** A Rate, Sum or Amount shall be entered by the Contractor against each reference or item and reference or items against which no Rate, Sum or Amount is entered shall be deemed to be covered by other Rates, Sums or Amounts entered elsewhere in the Schedules.
- 5.2.1.2** The Contractor shall omit from his Tender any Value Added Tax chargeable or any taxable supplies made under Contract to the Purchaser and payable by him as a taxable person to the Commissioners of Customs and Excise.
- 5.2.1.3** The Contractor shall allow for compliance in all respects with the applicable British Standard, Codes of Practice and any other Standards or Codes specified. The Contractor shall be fully responsible for obtaining such documents and familiarising himself with same.
- 5.2.1.4** The Contractor shall allow for compliance with all statutory safety regulations, including those of the Purchaser, and executing the Services in such an order or sequence as may be required to accord with the overall Project programme requirements.



5.3 Schedule of Rates

5.3.1 General

5.3.1.1 Schedule of Rates

A schedule of rates is to accompany the tender.

5.3.1.2 Man-hours

The Man-hour Rates which the Contractor inserts in the Schedule shall be deemed to include, but not necessarily be restricted to all allowances required for the following:

All cost associated with the employment of labour including the requirements of Government enactment's (V.A.T. excepted) and/or other suitable National Working Rule Agreement.

Supervision by non-working trade supervisors, other than those allowed separately by the Contractor in the General Preliminaries section of the Tender.

All man-hours and costs associated with collecting "Free Issue" materials from the Purchaser's stores or compounds and transporting to the Contractor's store or workshop, including all loading, unloading, stacking and storage. Also any costs associated with off-loading, stacking and storage of materials supplied by the Contractor. Compilation of stores record system and final reconciliation for all "Free Issue" materials. Generally this store will be located on the site.

Loading and transporting from the Contractor's store or compound and assembling and installing in the final position.

The installation of all work and operations required by the Specifications and Works Rules and Regulations.

The carrying out of any tests including submission of samples where required. Any necessary site measurement and sketching for fabrication and erection purposes.

Marking up construction drawings to record the "As Built" installation.

All necessary allowances for small hand tools and consumables which are not included as Constructional Plant in the General Preliminaries section of the Tender.

Protecting the works during construction period from damage and for making good /reinstating damage caused.

All required allowances for overhead and profit.



5.3.2 Materials

The material prices which the Contractor inserts in the Schedule of Rates shall be deemed to include the following:-

All costs associated with delivery to the Contractor's site stores or compound.

Any demurrage charges or costs associated with returning packing cases, drums and the like for materials supplied by the Contractor.

All necessary allowances for waste.

All necessary allowances for consumables.

All necessary fixing devices.

5.3.3 Testing

The man-hour rates shall include for all testing.

5.3.4 Schedule of Day work Rates

Variations shall be valued on a lump sum basis. Such lump sums shall be derived from the Schedule of Rates below and the man-hour estimates for the variations which the Engineer has agreed in writing and all of which shall be subject to the issue of a Variation Order.

Position	40 Hour Rate	Time & ½ Rate	Double Time
Site Supervision			
Working Foreman			
CompEx Approved Technician			
Approved Electrician			
Electrician			
Labourer			

Percentage to be added to net cost of materials %

Site Establishment

Cost inclusive of site management, office facilities, £
messing, toilets and constructional equipment at a weekly rate.



5.4 Programme

5.4.1 Provisional Programme

The following information is supplied for the guidance of the Tenderer and is provisional only, based upon the information available at the time of issue of the Tender:

- i Site visit – By arrangement
- ii. Tender required by – 01.03.13
- iii. Earliest date on which work can commence – Immediately
- iv. Latest date for completion, including all testing – TBA ISCo Engineer

The tenderer shall include a provisional programme with the tender to include key milestones for delivery of equipment within their supply.



6. Tender Pricing Summary

This tender summary to be completed by the tenderer

4.4 - Supply and installation of cabling £

4.5 - Supply of equipment £

Testing and Documentation £

Miscellaneous (Please State) £

Sub Total £

Site Establishment Total (based on weeks) £
(See Section 5.3.4)

Total Tender Price £



Appendix I

Schedules

SI451004_SCH Rev A – Cable Schedule



Appendix II

Cable Specifications

Type 'J'



TYPE	J
DESCRIPTION	XLPE Insulated Power Cable - Armoured
MANUFACTURING SPECIFICATION	BS5467
SERVICE	Power Distribution / Control (Max. 440V ac.)
VOLTAGE	600/1000V.
CONDUCTORS	Stranded Copper
INSULATION	XLPE (Cross Linked Polyethylene)
CORE COLOUR CODE	1 core Brown 2 cores Brown, Blue 3 cores Brown, Black, Grey 4 cores Brown, Black, Grey, Blue 5 cores Brown, Black, Grey, Blue, Green/Yellow 7 cores } 12 cores White insulation with core number indelibly marked at 19 cores regular maximum intervals of 50mm 27 cores } 37 cores 48 cores }
SHEATH	Black PVC
ARMOUR BEDDING	PVC
ARMOUR	Single Core - Aluminium Wire Multi Core - Galvanised Steel Wire
NOTES	The cable type shall be followed by a number that defines the number of cores within a given cable. e.g. J12 indicates a twelve core type J cable.