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MILLFIELD NURSERY, SPALDING FOUL WATER PUMP STATION TO THE SSG DCG V2 STANDARDS – PROJECT 715281

Anglian Water – Design and Construction Guidance V2

Produced by Paradigm Pump Services on behalf of Seagate Homes (UK) Ltd

Issue	Date	Reason	Issued	Approved	Revisions Show In
A	11/03/2021	For approval	T. Gulley	G. Gulley	
B	28/05/2021	For approval	T. Gulley	G. Gulley	RED

Table of Contents

Overview / Summary page 3
Overview 4
Inflow and discharge rates 4
Emergency storage calculations 4
Rising main 4
Pump duty requirements 5
Pump station layout 5
Retention time and septicity 5
Cabling 6
Control equipment 6
Flow and Pressure Monitoring 6
Telemetry 6
Access covers 6
Lifting equipment 7
Access ladder 7
Baffle plate 7
Appendices 7
Appendix A – Calculations 8
Appendix B – Storage Calculations 9
Appendix C – Pump Data 10
Appendix D – Drawings 11
Appendix E – Wiring Diagrams 12
Appendix F – Anglian Waters' Telemetry Process 13

Overview / Summary page

Water authority	Anglian Water
Design & Construction Guidelines Version	2.0
Site name	Millfield Nursery, Spalding
Site location	Spalding Common
Location drawing number	12175-WMS-ZZ-XX-DR-C-39201-S8-P6-S104_LAYOUT-21.05.11
Client	Seagate Homes (UK) Ltd
Produced by	Paradigm
Pump station location	South east corner of site
Anticipated adoption date	TBC
Pump station type	Type 3
Liquid handled	Foul
Unit type	Private Residential
Number of units / size	145 houses
Emergency storage volume	8,874 Litres
Diameter of wet well	3.000m
Depth of wet well	5.500m
Size of Valve chamber	1800mm x 2400mm
Depth of valve chamber	1500mm
Wet well Cover Size	1500mm x 900mm
Valve chamber cover Size	2400mm x 1800mm
Inlet Manhole cover size	675mm x 657mm
Pipework size	80mm
Rising main size / specification	110mm OD SDR 11
Rising main length	397m
Surge analysis required	No
Compound size	8.500m x 11.000m
Pumps	XFP 80C VX.2
Pump size	2.2kW
Head	7.73m
Flow rate	4.80L/sec
Retention time full usage	1.75 Hours
Retention time Half usage	3.51 Hours

Overview

The Mechanical & Electrical proposal within this submission is based on Anglian Waters' local practice for pumping stations document dated 22nd June 2020 in accordance with the Sewerage Sector Guidance Appendix C, Design and Construction Guidance approved version 2.0 dated 10th March 2020.

The proposed pump station location and rising main details can be found on drawings provided by Wm Saunders Partnership Limited Liability Partnership trading as William Saunders under separate cover.

Inflow and discharge rates

The pump station, is designed to serve the foul flows from 145 residential plots which, based on Anglian Waters' addendum, gives a calculated peak flow of 1.31L/sec. Inflow calculations can be found under Appendix A.

The design pump rate has been set at a minimum of 4.80L/sec in line with the Design and Construction Guidance (DCG) clause D6.3.1 which would provide excess of the 0.75m/s minimum velocity within the wet well and valve chamber pipework.

Emergency storage calculations

Based on the storage requirements given in Anglian Water' addendum, for 145 properties there will be a requirement for an emergency storage volume of 8,874 Litres. (Appendix A).

The 3.0m Diameter x 5.500m deep wet will accommodate 8,426 litres and the inlet manhole will store the remainder. This will be above the high level alarm of -1.850m and the top water level of -0.658m.

Details of the drainage layout can be found in the information provided by William Saunders under separate cover.

Rising main

The rising main consists of 397m of 110mm OD SDR11 pressure pipe with a 89.1mm nominal bore. The rising main falls for 26.4m to W01 at a fall of 1:28. The rising main then rises for 133.6m to AV1 at a rise of 1:385. The rising main then falls for 90.0m to W02 at a fall of 1:151. From there the rising main rises for 147.0m to the final outfall at a rise of 1:294. All the gradients are greater than the minimum fall of 1:300 and minimum rise of 1:500 in line with the DCG clause D6.3.3.

For further details of the pumping main route and profile we would refer you to the information provided by William Saunders under separate cover.

On the basis the pumping main is 397 metres long and is less than the 500 metres referred to within DCG clause D6.3.3m, a surge assessment has not been undertaken on the profile.

Pump duty requirements

We have undertaken a set of our own head loss calculations to determine the pump duty, a copy of this can be found enclosed within appendix A.

To meet the required pump duty of 4.80L/sec against a total calculated head of 7.73m we have selected submersible sewage pumps from Sulzer XFP80 C VX.2 range with 2.2kW motors suitable for a 400V/3ph/50Hz electrical supply (Appendix C).

As the motor ratings are less than the 7.5kW detailed in DCG clause F2.3.16.2 we do not propose to fit the pumps with a seal leakage detection system.

Each pump would be fitted with a blue rope lifting system with each end suitably looped and held by a carabiner to a snap hook bracket at the top of the wet well either side of the upper guide rail bracket.

Pump station layout

The pumps pipework and valves would be installed within concrete chambers constructed by others to the layout as shown on Paradigm Pump Services' drawing shown in appendix D.

Paradigm Pump Services' contract would terminate a short distance outside the foul water chamber in a PN16 flange ended pipe.

An appropriately rated ductile iron to PE rising main coupling will be required to connect the pump station pipework to the rising main.

An 80mm valve chamber drain would be installed incorporating a sludge valve connected to a spindle terminating just below the access cover level. This can then be operated with a tee key at cover level.

As this site is serving a large site, an inlet chamber complete with a cast iron penstock has been added to this installation to isolate all flows going to the pump station to allow for future works to be completed safely within the wet well without the hazard of incoming flows.

Retention time and septicity

Based on a half-developed site the retention time within the system is 3.51 hours and for the fully developed site 1.75 Hours.

As these are well below the 6-hour figure after which septicity is considered to be a problem and as a result, we do not propose to install any permanent or temporary septicity control equipment.

Cabling

Pumps and level control cabling will be wired back to the control panel via an intermediate junction box held within a kiosk as outlined on the Paradigm drawing shown in appendix D as per Anglian Waters' addendum clause F3.4.5.4.1.

We have allowed for sealing the three 100mm pump cable ducts and level control cable duct with a Filoform duct seal as per DCG V2 clause F3.4.4.13.

Control equipment

Automatic level control would be via a Pulsar ultrasonic level controller augmented by two separate float switches for high level and back up control, all wired back to a multi compartment control panel complying with the latest DCG standards.

The control panel would be installed within a floor fixing GRP kiosk of dimensions 2,500mm wide x 1,750mm high x 750mm deep.

Please refer to Appendix E for our updated Wiring Diagrams and Kiosk Layout to DCG.

Flow and Pressure Monitoring

As per DCG V2 clause F4.4.1, each non-return valve and the joining tee piece upstream of the isolation valve on each pump riser will be fitted with a ½" BSP tapping point with a quarter turn ball check valve and will be plugged with a cap. As the flow rate is less than 70 L/sec as per the DCG V2 clause D7.6.1, we do not propose to fit a flow meter.

Telemetry

Telemetry must be arranged between the developer and Anglian Water. We have attached a guide on the steps required to achieve this in appendix F.

Access covers

Inlet Chamber

675mm x 675mm D400 access cover will be installed.

Wet well

1500mm x 900mm Steelway Prolift FACTA B access cover will be installed incorporating internal fall protection and safety barriers.

Valve Chamber

2400 x 1800 Steelway Prolift FACTA B access cover will be installed incorporating internal fall protection and safety barriers.

Lifting equipment

We propose that a Lloyds Rota Lifting Davit will be provided complete with a single cast in type davit socket all rated for 500kg SWL.

Access ladder

A galvanised steel ladder has been proposed within the valve chamber complete with a retractable hand hold as outlined on the drawing in appendix D.

Baffle plate

A stainless steel baffle plate will be installed around the 150mm opening

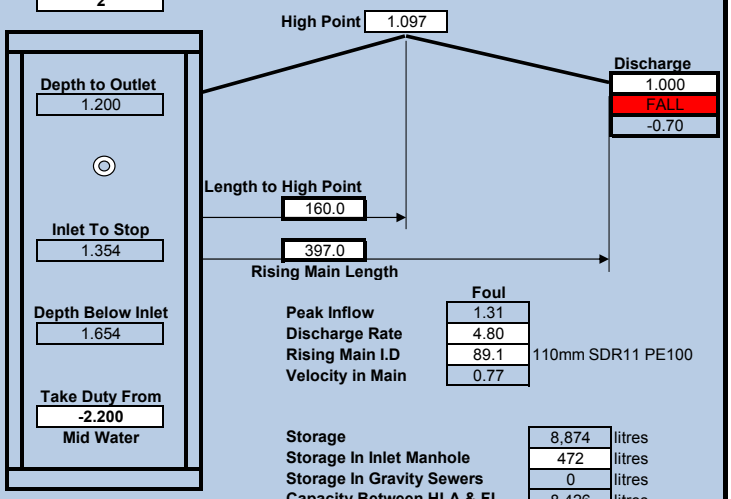
Appendices

Appendix A – Calculations

Clients Name	William Saunders	Project Ref	715281
Site Address	Seagate Homes (UK) Ltd	Issue	2
	Millfield Nursery, Spalding	Date	28/05/21

Adopting Authority	Anglian Water
Station Type Foul / Storm	Foul
Number of Dwellings	145
Number of Duty Pumps	1
Number of Pumps	2

Cover Level	2.900
VC Outlet	1.700
Flood Level	-0.658
Inlet	-0.946
HLA	-1.850
P2 Start	-1.950
P1 Start	-2.100
Mid Water	-2.200
Stop Level	-2.300
Dead Area	300
Base Level	-2.600



	Foul	
Peak Inflow	1.31	
Discharge Rate	4.80	
Rising Main I.D	89.1	110mm SDR11 PE100
Velocity in Main	0.77	

Storage	8,874	litres
Storage In Inlet Manhole	472	litres
Storage In Gravity Sewers	0	litres
Capacity Between HLA & FL	8,426	litres
Total Storage Volume	8,898	litres

Wet Well Diameter	3000	mm
Calc Chamber Depth	5.146	m
Actual Chamber Depth	5.500	m
Max Theoretical Starts	15.00	
Actual Starts	3.29	

Volume Per M	7,069	litres
Depth Between Starts	100	mm

Theoretical Op Volume	288	litres
Actual Op Volume	1,414	litres
Rising Main Volume	2,475	litres
Combined Main and Op Vol	3,889	litres

Dwf Inflow Per Day	53242.19
No. of Main Clears per Day	13.69
Retention Hrs Full Usage	1.75
Retention Hrs Half Usage	3.51

Retention Calcs Assume Ascending Main

	Rising Main	Common 2	Common 1	Individual 3	Individual 2	Individual 1
Flow Rate (l/sec)	4.80	4.80	4.80	4.80	4.80	4.80
Static Head (M)	3.20					
Pipe Diameter (mm)	89.10	80	80	80	80	80
Velocity (M/sec)	0.77	0.95	0.95	0.95	0.95	0.95
Roughness Factor	0.30	0.30	0.30	0.30	0.30	0.30
Pipe length (M)	397			3.0	4.3	
Duckfoot Bend						1
Short Radius Bends				1	1	
Long Radius Bends	9					
Tee Staight through				1		
Tee through branch				1		
Radial Tee thro Branch						
Sluice Valve				1		
Non Return Valve				1		
Bellmouth inlet						
Sharp Taper						
Standard Taper		1				
Equivalent Pipe Length (M)	411.4342	1.76	0	15.08	7.02	2.72
Reynolds Number	6.0E+04	6.7E+04	6.7E+04	6.7E+04	6.7E+04	6.7E+04
Darcy-Weisbach Friction Factor	0.0290	0.0296	0.0296	0.0296	0.0296	0.0296
Velocity Head	0.030	0.046	0.046	0.046	0.046	0.046
Hydraulic (Piezometric) gradient	0.0098	0.0172	0.0172	0.0172	0.0172	0.0172
Friction Head Loss	4.046	0.030	0.000	0.259	0.121	0.047

Calc Duty Point	4.80	L/S	Total Head	7.73	M	Static Head 3.20 M
Pump Selection	XFP 80C VX.2		Impeller	2		kW Rating 2.2
Actual Duty	5.17	L/S	Head	8.45	M	
			Ideal Pump Flow	12.30	L/S	
			% of Best Efficiency Point	42.0	%	

Appendix B – Storage Calculations

Storage In Manholes

Manhole Reference	Manhole Diameter (mm)	First Flood Level	Cover Level	Invert Level	Effective Volume (litres)
F25 (Inlet Manhole)	1500	-0.658	2.900	-0.925	472
		-0.658			
		-0.658			
		-0.658			
		-0.658			
		-0.658			
		-0.658			
		-0.658			
		-0.658			
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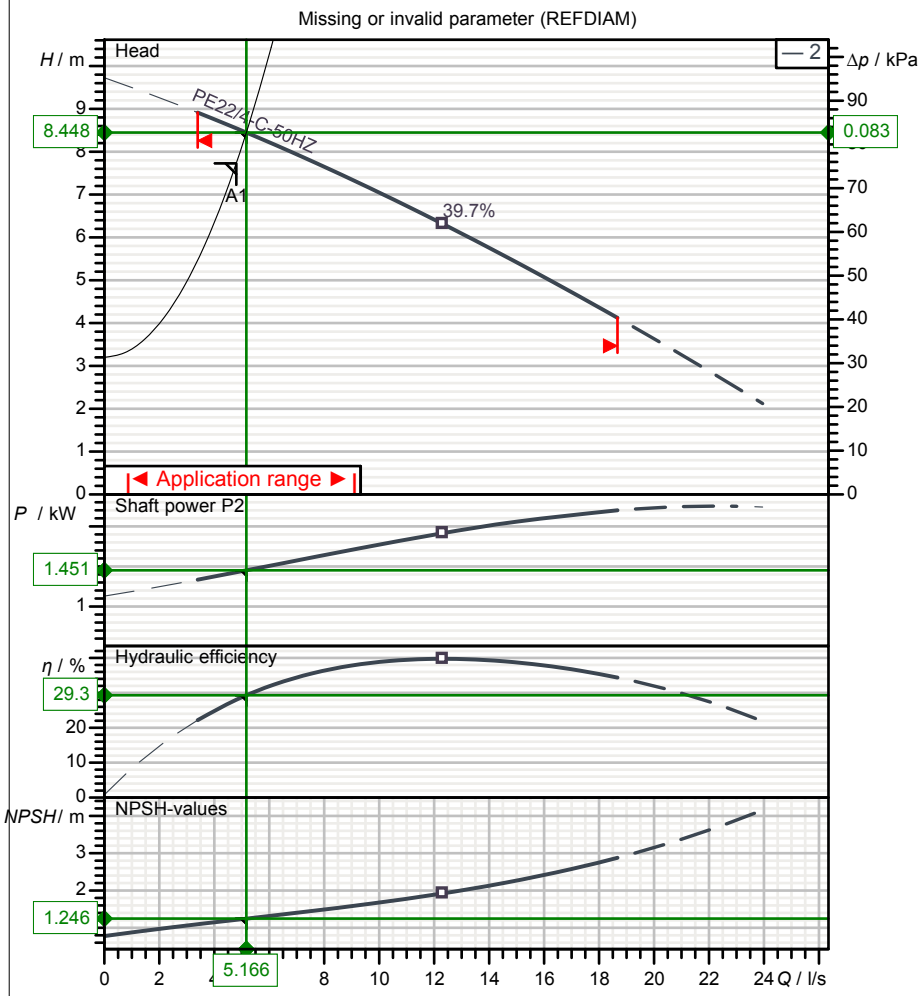
		-0.658			
		-0.658			
		-0.658			
		-0.658			
		-0.658			
		-0.658			
		-0.658			
		-0.658			
		-0.658			
		-0.658			
		-0.658			
				TOTAL	472

Storage In Gravity Sewers

Gravity Run	Gravity Drain Diameter (mm)	First Flood Level	Length (m)	Upper Invert	Effective Volume (litres)
		-0.658			
		-0.658			
		-0.658			
		-0.658			
		-0.658			
		-0.658			
		-0.658			
		-0.658			
		-0.658			
		-0.658			
		-0.658			
		-0.658			
		-0.658			
		-0.658			
		-0.658			
		-0.658			
		-0.658			
		-0.658			
				TOTAL	

Appendix C – Pump Data

XFP 80C VX 50HZ



Test Standard
ISO9906:2012,HI 11.6/14.6≤10kW

2021-05-28

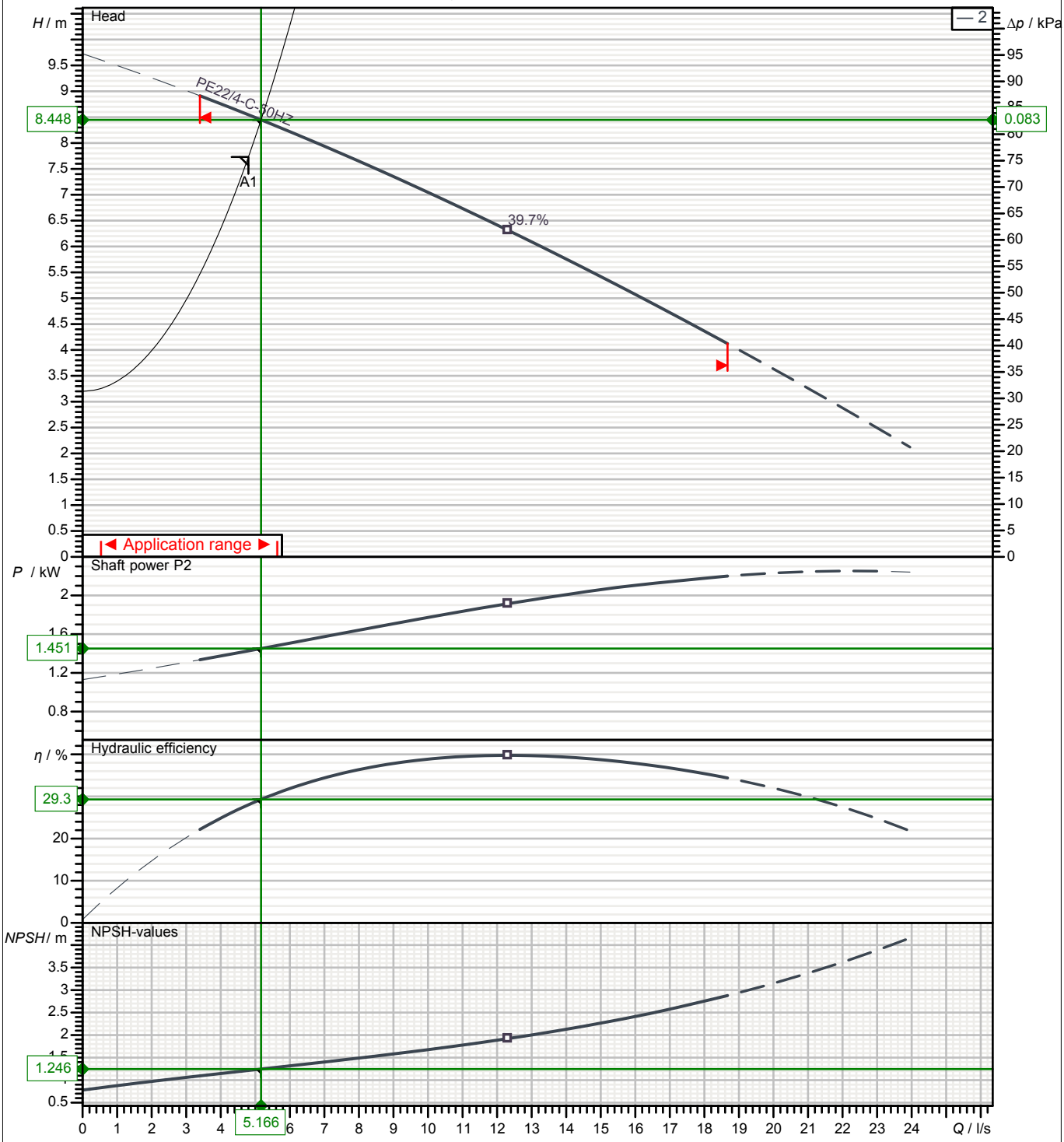
Operating data specification		Power input	1.66 kW
Flow	5.166 l/s	Head	8.45 m
Efficiency	29.3 %	Shaft power	1.45 kW
NPSH	1.25 m	Fluid	Water
Temperature	20 °C	Nature of system	Single head pump
No. of pumps	1		
Pump data			
Type	XFP 80C VX 50HZ	Make	SULZER
Series	XFP PE1-PE3	Impeller	Vortex impeller
N° of vanes	6	Impeller size	199 mm
Free passage	80 mm	Suction flange	DN80
Discharge flange	DN80	Type of installation	
Moment of inertia	0.0083 kg m²		Wet well installation with pedestal
Motor data			
Rated voltage	400 V	Frequency	50 Hz
Rated power P2	2.2 kW	Nominal Speed	1440 1/min
Number of poles	4	Efficiency	86.8 %
Power factor	0.8	Rated current	4.6 A
Starting current	29.8 A	Rated torque	14.6 Nm
Starting torque	21.2 Nm	Degree of protection	IP 68
Insulation class	H	No. starts per hour	15

Sulzer reserves the right to change any data and dimensions without prior notice
and can not be held responsible for the use of information contained in this software.

Curve number	Pump performance curves	
Reference curve XFP80C-VX 50HZ	**XFP 80C VX 50HZ**	SULZER

					Discharge DN80	Frequency 50 Hz
Density 998.2 kg/m³	Viscosity 1 mm²/s	Test Standard ISO9906:2012,HI 11.6/14.6≤10kW			Rated speed 1464 1/min	Date 2021-05-28
Flow 5.166 l/s	Head 8.45 m	Shaft power 1.45 kW	Power input 1.66 kW	Rated power P2 2.2 kW	Hyd. efficiency 29.3 %	NPSH 1.25 m

Missing or invalid parameter (REFDIAM)



Wet well installation with pedestal

Impeller size	N° of vanes	Impeller	Solid size	Revision
199 mm	6	Vortex impeller	80 mm	

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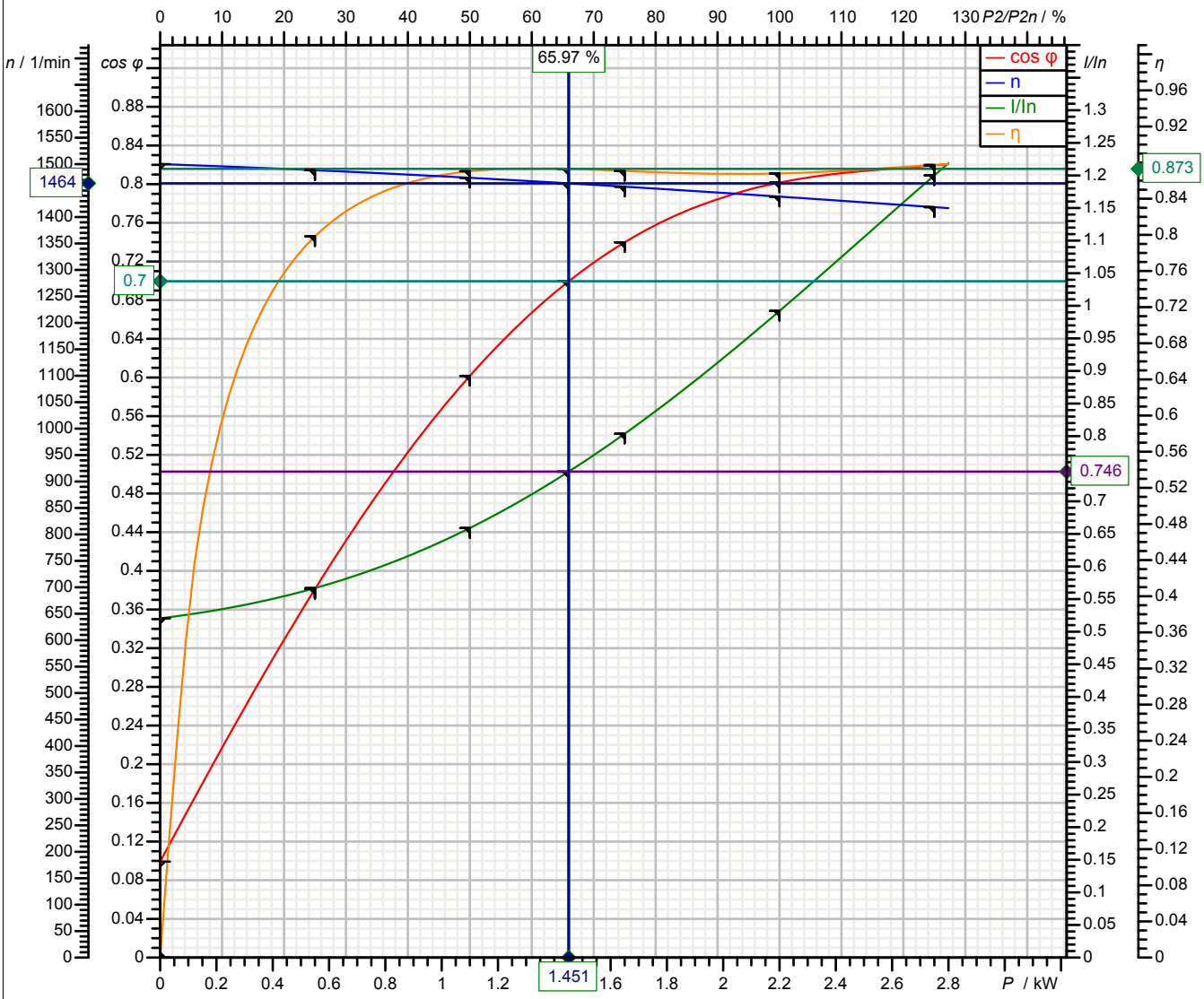
Frequency 50 Hz	PE1

Motor performance curve

PE22/4-C-50HZ

SULZER

Rated power	Service factor	Nominal Speed	Number of poles	Rated voltage	Date
2.2 kW	1	1440 1/min	4	400 V	2021-05-28



Symbol	No load	25 %	50 %	75 %	100 %	125 %
P2 / kW	0	0.55	1.1	1.65	2.2	2.75
P1 / kW	0.1646	0.6889	1.264	1.895	2.534	3.135
I / A	2.394	2.608	3.031	3.697	4.564	5.52
cos φ	0.09926	0.3813	0.6017	0.7398	0.8016	0.8195
n / 1/min	1500	1489	1474	1457	1439	1419
s / %	0	0.7635	1.719	2.839	4.09	5.418
M / Nm	0	3.528	7.125	10.81	14.6	18.51
η / %	0	79.84	87.05	87.08	86.81	87.74

Tolerance according to VDE 0530 T1 12.84 for rated power

Starting current	Starting torque	Moment of inertia	No. starts per hour
29.8 A	21.2 Nm	0.008 kg m²	15

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SULZER

Massblatt XFP 80C–VX Nassinstallation
Dimension sheet WET–WELL Installation
Dimensioni Installazione sommersa
Hoja de dimensiones instalación sumergida
Plan d'encombrement Installation noyee

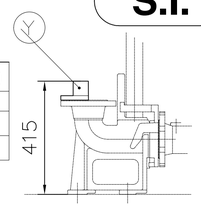
No: AN-M.22.609 - 06
Drawn: 11.08.10 / D.Whelan
Issue Date: 10/01/2018
Änderungen vorbehalten
Technical changes reserved
Con riserva di modifiche
Con reserva de modificaciones
Sous réserve de modification

50Hz

Typ Type Tipo	Gewicht Weight Poids Peso (kg)
PE 15/4	107
PE 22/4	117
PE 29/4	117

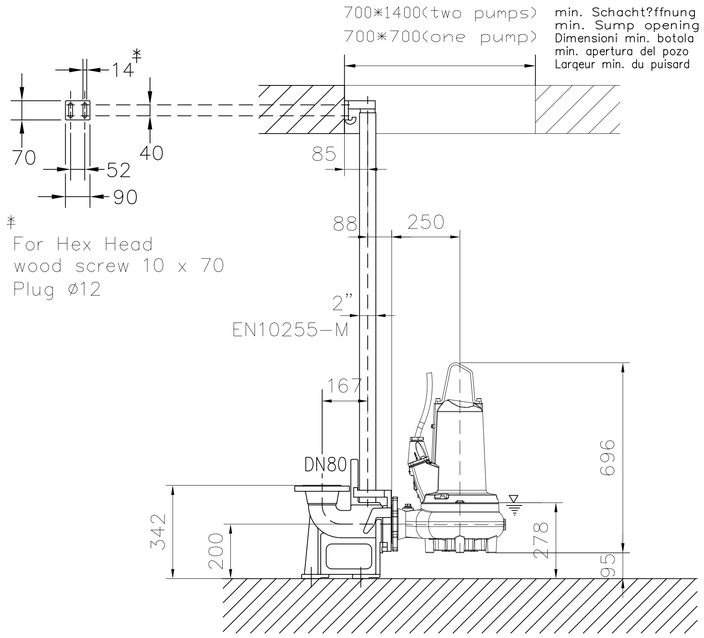
S.I.

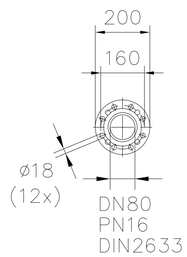
Part No.	Y(mm)
DN 80	
6 232 0649	
6 232 0650	ø 90

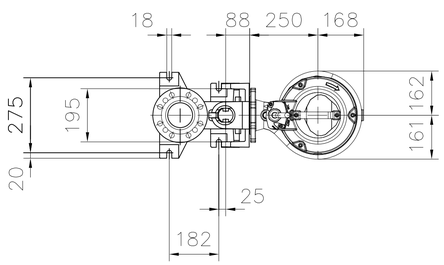


60Hz

Typ Type Tipo	Gewicht Weight Poids Peso (kg)
PE 18/4W	117
PE 22/4	117
PE 28/4W	117
PE 35/4	117







Gewicht: Beinhaltet Pumpe,Halterung(Füssstück) und Kabel (50 Hz = 10 m; 60 Hz = 15 m)
Weight: includes pump, slider bracket and cable (50 Hz = 10 m; 60 Hz = 15 m)
Peso: include pompa, pezzo intermedio a cavo (50 Hz = 10 m; 60 Hz = 15 m)
Peso: Incluye bomba, soporte deslizante y cable (50 Hz = 10 m; 60 Hz = 15 m)
Poids : incluant la pompe, le coulisseau et le cabïe (50 Hz = 10 m; 60 Hz = 15 m)

Guss–Allgemeintoleranzen nach DIN1680 – GTB16
General tolerances for castings in acc. to DIN1680–GTB16
Tolleranze generali delle fusioni secondo DIN1680–GTB16
Tolerancias generales para la fundicíon seg. de DIN1680–GTB16
Tolérance générale de la fonderie selon DIN1680–GTB16

SULZER

Massblatt XFP 80C–VX Nassinstallation
Dimension sheet WET–WELL Installation
Dimensioni Installazione sommersa
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Con riserva di modifiche
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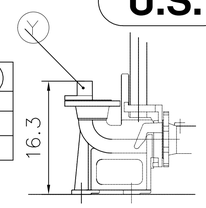
Sous réserve de modification

50Hz

Typ Type Tipo	Gewicht Weight Poids Peso (lbs)
PE 15/4	236
PE 22/4	258
PE 29/4	258

U.S.

Part No.	Y(mm)
DN 80	
6 232 0649	
6 232 0650	ø 90



60Hz

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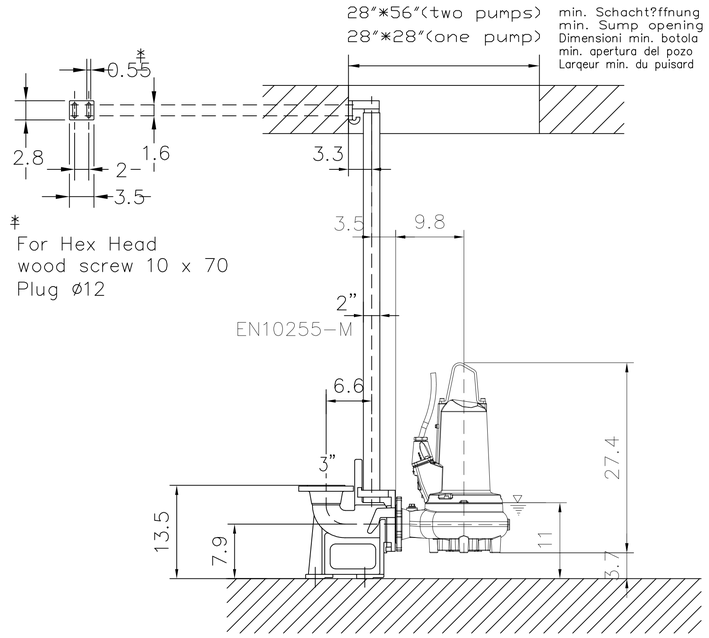
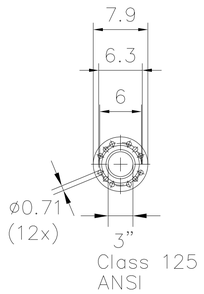
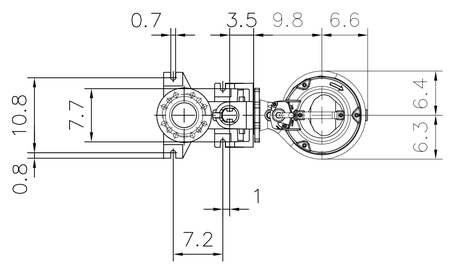
PE 18/4W	258
PE 22/4	258
PE 28/4W	258
PE 35/4	258







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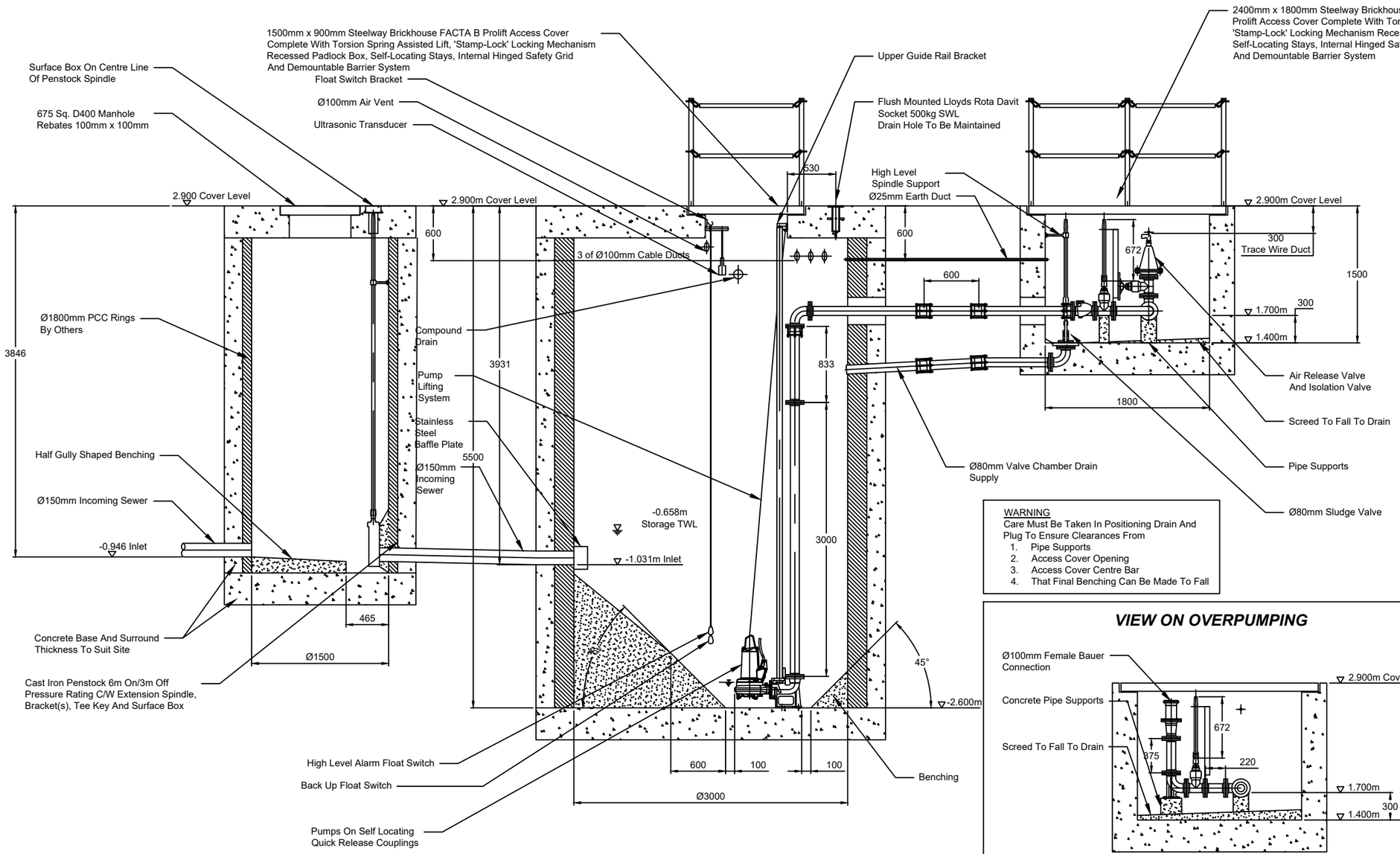
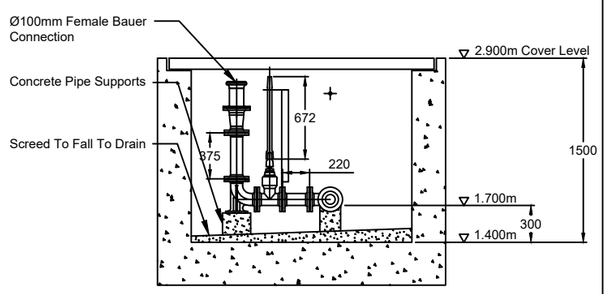
Tolérance générale de la fonderie selon DIN1680–GTB16

Appendix D – Drawings



WARNING
Care Must Be Taken In Positioning Drain And Plug To Ensure Clearances From
1. Pipe Supports
2. Access Cover Opening
3. Access Cover Centre Bar
4. That Final Benching Can Be Made To Fall

VIEW ON OVERPUMPING



Operational Levels	
-0.658m	Storage Top Water Level
-0.946m	Inlet
-1.850m	High Level Alarm
-1.950m	Standby Pump Start
-2.100m	Duty Pump Start
-2.300m	Common Pump Stop
-2.600m	Sump Floor

NOTES

DO NOT SCALE

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4 STRUCTURAL DETAIL ILLUSTRATIVE ONLY.

5 BENCHING TO BE FORMED AS LAID DOWN IN 'SEWERAGE SECTOR GUIDANCES (SSG) DESIGN AND CONSTRUCTION GUIDANCE V.2 (DCG V.2)' AND TO LOCAL/ADOPTING AUTHORITY SPECIFICATIONS.

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10 LEVEL CONTROLS SHOWN NOTIONALLY, TO BE POSITIONED AWAY FROM OBSTRUCTIONS, LEVELS READILY ADJUSTABLE AFTER INSTALLATION.

11 DRAWINGS ARE INDICATIVE WITH REGARD TO CIVIL WORKS AND SHOULD NOT BE USED FOR CONSTRUCTION.

REV	DATE	DESCRIPTION	DRN	CHK	APR
B	27/05/21	Second Issue	T.G.	J.A.	G.G.
A	11/03/21	First Issue	T.G.	J.A.	G.G.

FOR APPROVAL

PARADIGM Group
35, Bolton Road, Reading
Berkshire
RG2 0NH
0118 9865101
www.pump.net

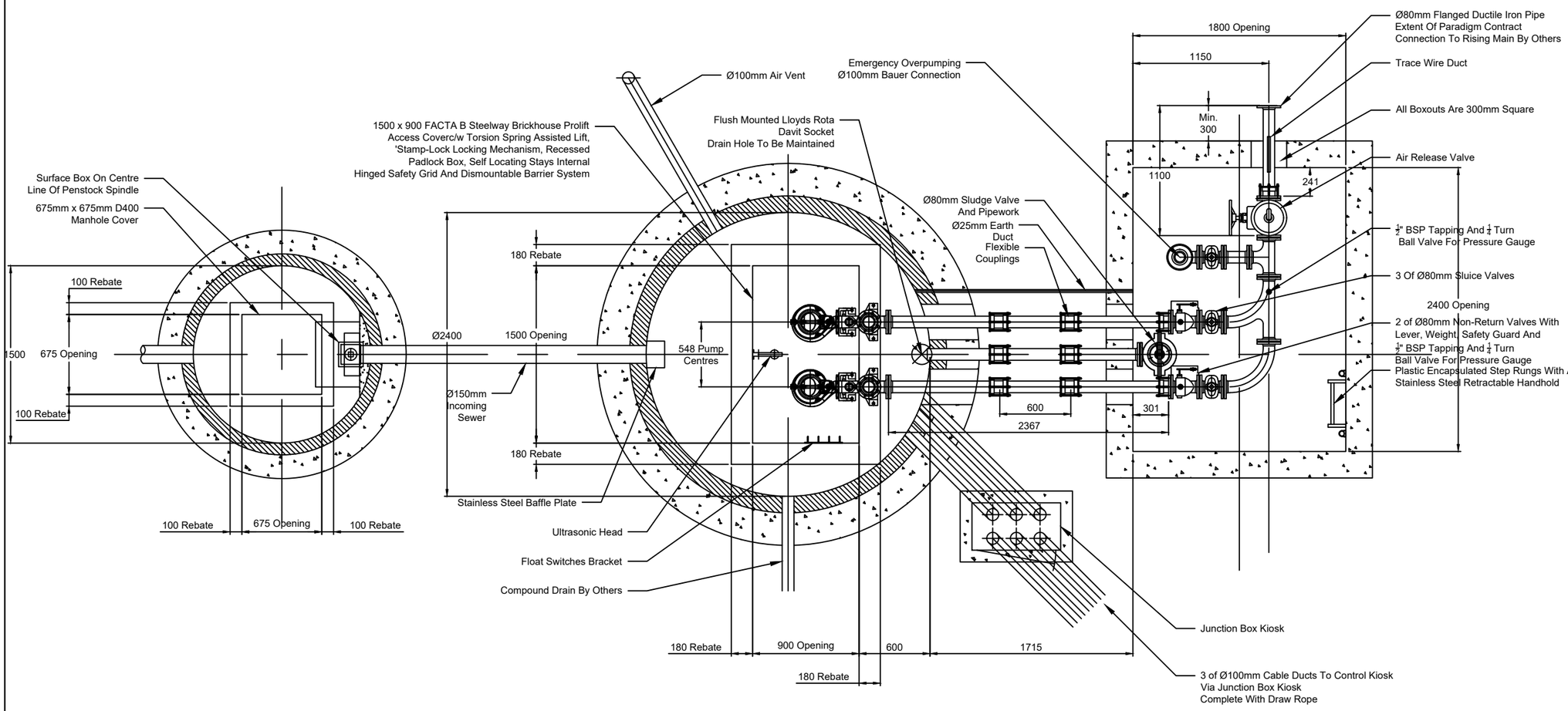
PROJECT
MILLFIELD NURSERIES
SPALDING COMMON
LINCOLNSHIRE

TITLE
Foul Water Pump Station
Side View

CLIENT

CONTRACT	APR	DATE
715281	G.G.	27/05/2021
SCALE @ A3 1:50	CHK J.A.	DATE 27/05/2021
	DRN T.G.	DATE 27/05/2021

DRAWING N°.	SHEET N°.	REVISION
715281_T2	01	B



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-2.300m	Common Pump Stop
-2.600m	Sump Floor

PUMP INFORMATION	
Pump Type	*XFP 80C VX.2*
Motor Rating	*2.2kW*
Pipe / Valve Size	*Ø80mm*
Impeller	*Vortex*
Control System	*Pulsar Ultrasonic Ultrasonic Transducer And Controller Complete With Two Back Up Float Switches*
Final Connection	*Ductile Iron*
Termination	*DN80 PN16 Flange*
Pipe O.D.	*Ø98mm*
Flange Diameter	*PN16*

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B	27/05/21	Second Issue	T.G.	J.A.	G.G.
A	11/03/21	First Issue	T.G.	J.A.	G.G.

FOR APPROVAL

PARADIGM Group

35, Bolton Road, Reading
Berkshire
RG2 0NH
0118 9865101
www.pump.net

PROJECT
MILLFIELD NURSERIES
SPALDING COMMON
LINCOLNSHIRE

TITLE
Foul Water Pump Station
Top View

CLIENT

CONTRACT	APR	DATE
715281	G.G.	27/05/2021
SCALE @ A3 1:40	CHK J.A.	DATE 27/05/2021
	DRN T.G.	DATE 27/05/2021

DRAWING N°.	SHEET N°.	REVISION
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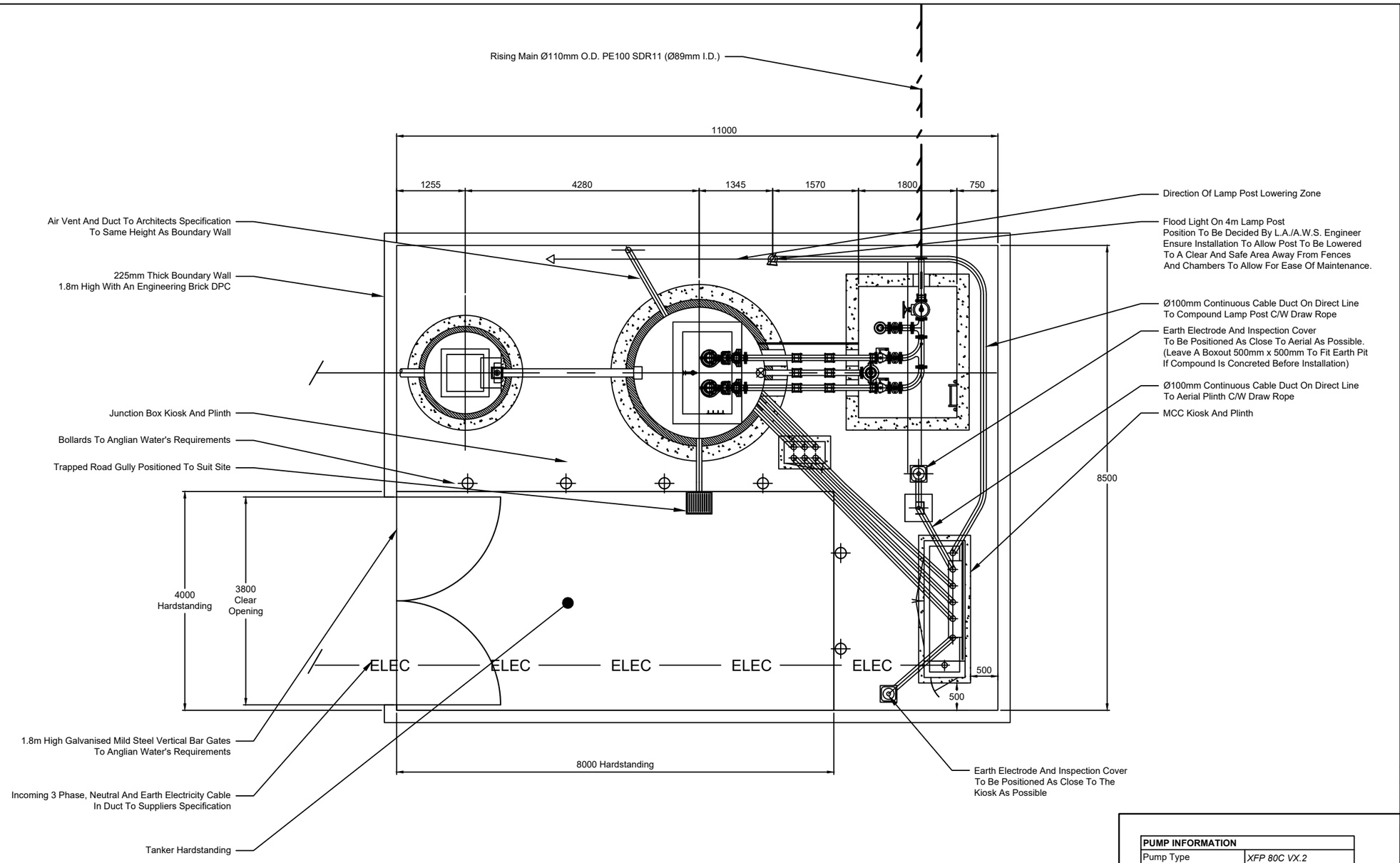

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PUMP INFORMATION	
Pump Type	*XFP 80C VX.2*
Motor Rating	*2.2kW*
Pipe / Valve Size	*Ø80mm*
Impeller	*Vortex*
Control System	*Pulsar Ultrasonic Ultrasonic Transducer And Controller Complete With Two Back Up Float Switches*
Final Connection	*Ductile Iron*
Termination	*DN80 PN16 Flange*
Pipe O.D.	*Ø98mm*
Flange Diameter	*PN16*

REV	DATE	DESCRIPTION	DRN	CHK	APR
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FOR APPROVAL

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35, Bolton Road, Reading
Berkshire
RG2 0NH
0118 9865101
www.pump.net

PROJECT
MILLFIELD NURSERIES
SPALDING COMMON
LINCOLNSHIRE

TITLE
Foul Water Pump Station
Compound View

CLIENT

CONTRACT	APR	DATE
715281	G.G.	27/05/2021
SCALE @ A3 1:80	CHK J.A.	DATE 27/05/2021
	DRN T.G.	DATE 27/05/2021

DRAWING N°.	SHEET N°.	REVISION
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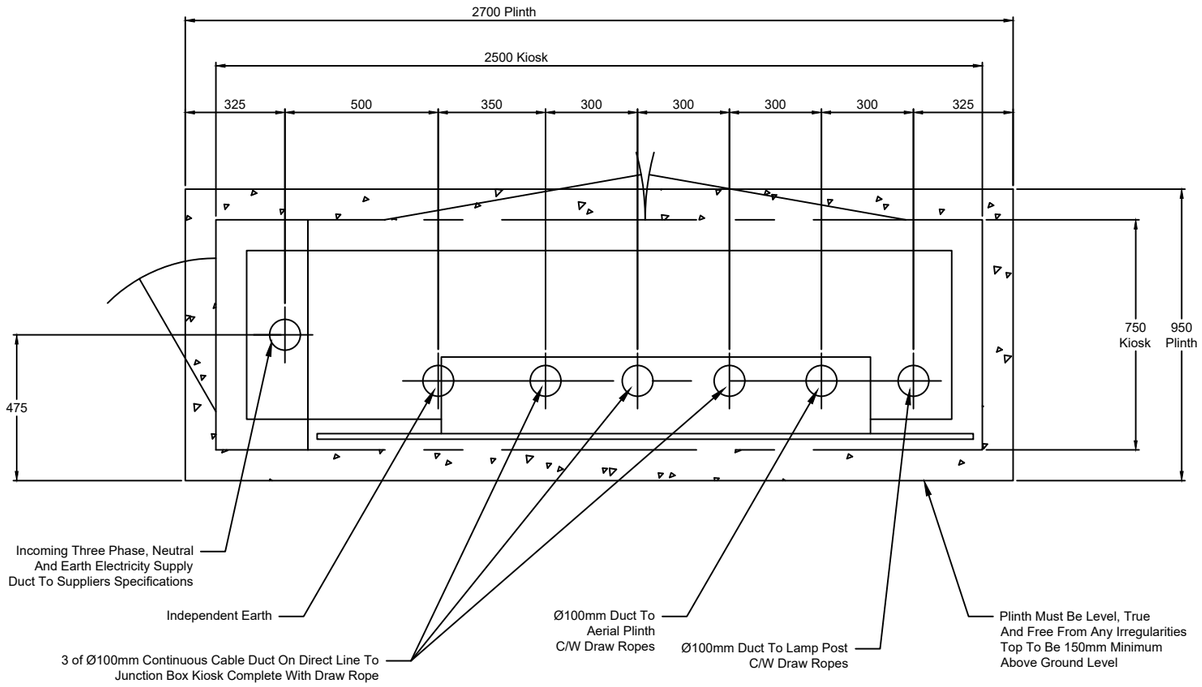
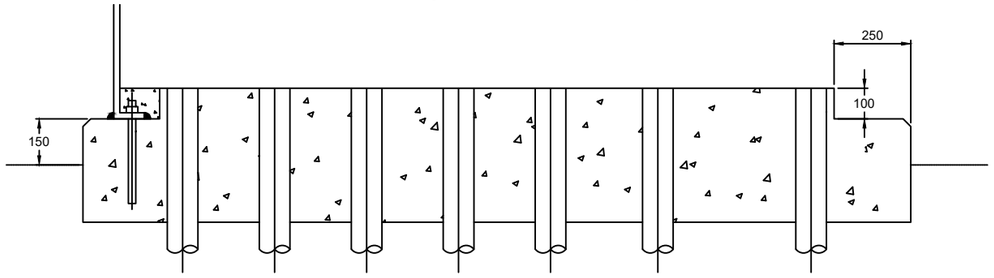
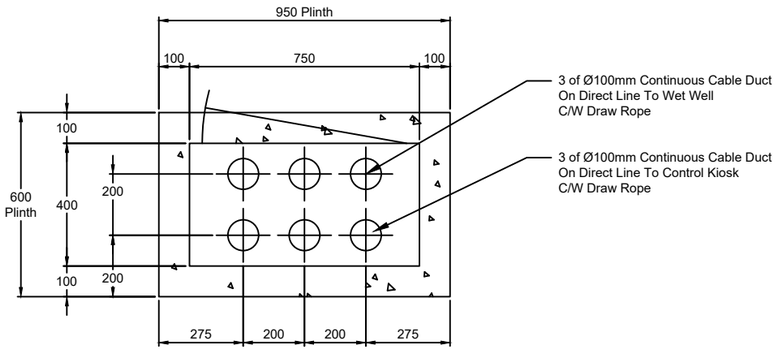


CONTROL KIOSK PLINTH DETAIL

Kiosk Dimensions 1,750mm High x 2,500mm Wide x 750mm Deep

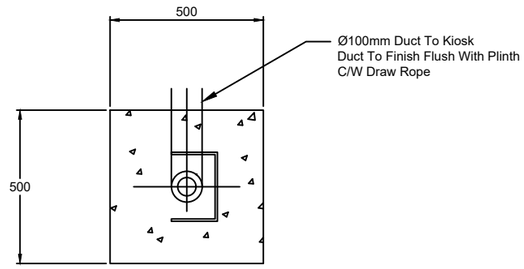


KIOSK BASE DETAILS

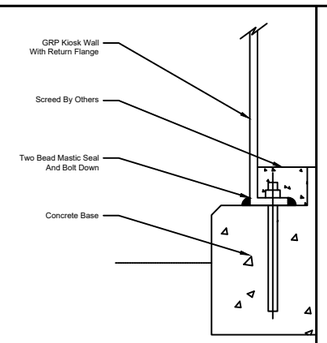


JUNCTION BOX KIOSK PLINTH DETAIL

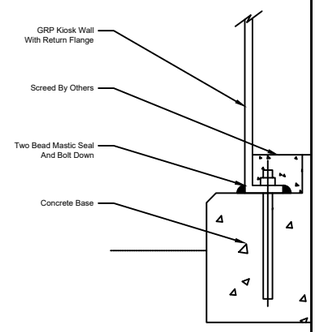
Kiosk Dimensions 1,250mm High x 750mm Wide x 400mm Deep



AERIAL DETAIL TOP VIEW



MCC KIOSK REBATE DETAIL



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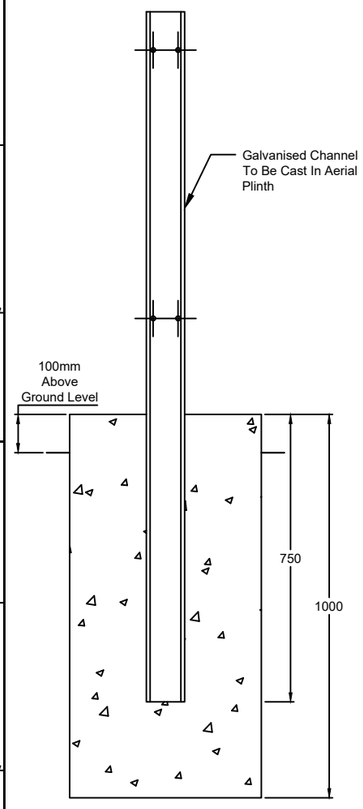

AERIAL DETAIL SIDE VIEW

NOTES

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A	11/03/21	First Issue	T.G.	J.A.	G.G.

FOR APPROVAL

PARADIGM Group
35, Bolton Road, Reading
Berkshire
RG2 0NH
0118 9866101
www.pump.net

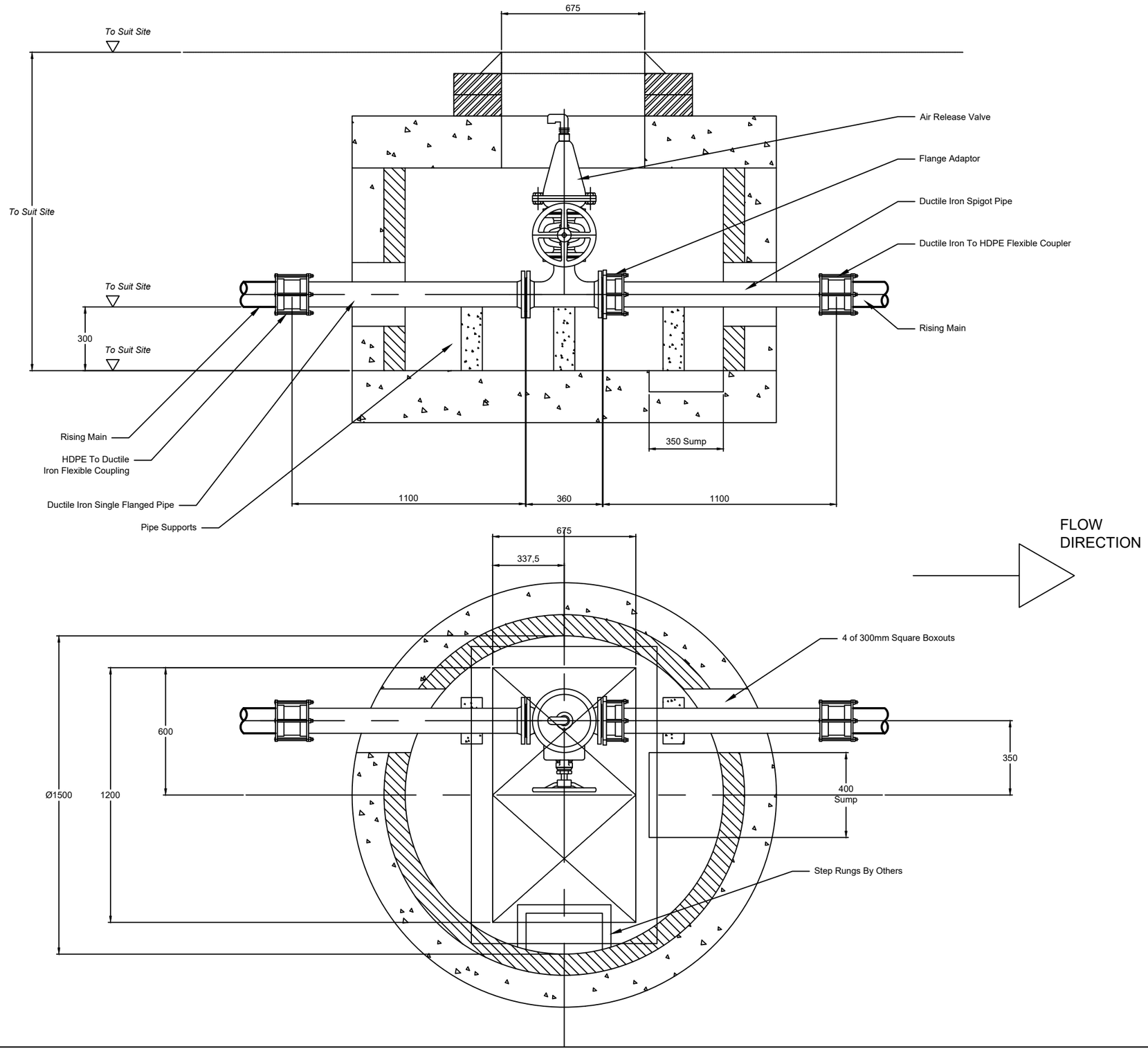
PROJECT
MILLFIELD NURSERIES
SPALDING COMMON
LINCOLNSHIRE

TITLE
Foul Water Pump Station
Compound View

CLIENT

CONTRACT	APR	DATE
715281	G.G.	11/03/2021
SCALE @ A3: NTS	CHK: J.A.	11/03/2021
	DRN: T.G.	11/03/2021

DRAWING N°.	SHEET N°.	REVISION
715281_T2	04	A



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A	11/03/21	First Issue	T.G.	J.A.	G.G.

FOR APPROVAL

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Berkshire
RG2 0NH
0118 9865101
www.pump.net

PROJECT
MILLFIELD NURSERIES
SPALDING COMMON
LINCOLNSHIRE

TITLE
Foul Water Pump Station
Air Release Valve

CLIENT

CONTRACT	APR	DATE
715281	G.G.	11/03/2021
SCALE @ A3 1:20	CHK J.A.	DATE 11/03/2021
	DRN T.G.	DATE 11/03/2021

DRAWING N°.	SHEET N°.	REVISION
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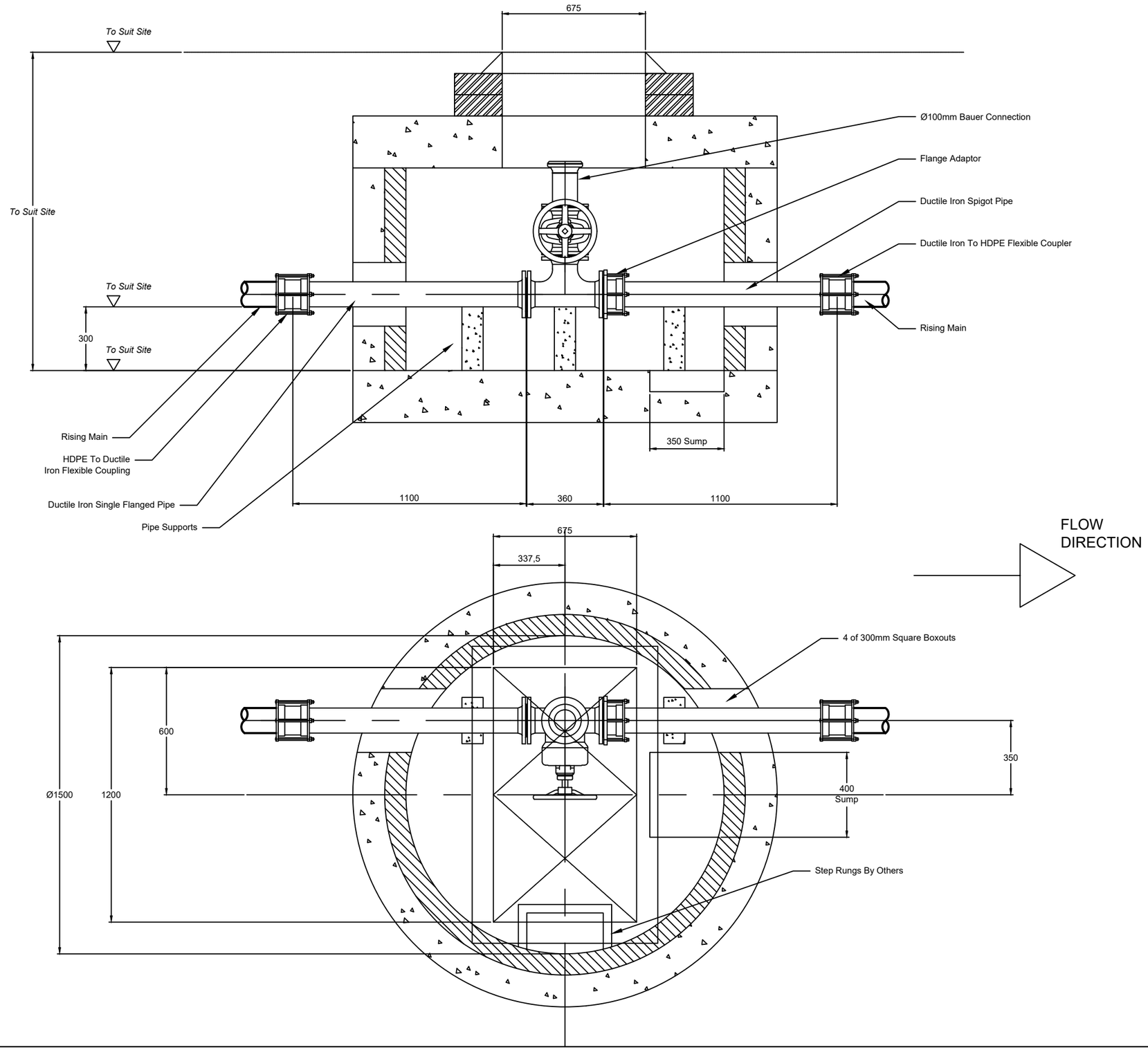

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A	11/03/21	First Issue	T.G.	J.A.	G.G.

FOR APPROVAL

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Berkshire
RG2 0NH
0118 9865101
www.pump.net

PROJECT
MILLFIELD NURSERIES
SPALDING COMMON
LINCOLNSHIRE

TITLE
Foul Water Pump Station
Wash Out Valve

CLIENT

CONTRACT	APR	DATE
715281	G.G.	11/03/2021
SCALE @ A3 1:20	CHK J.A.	DATE 11/03/2021
	DRN T.G.	DATE 11/03/2021

DRAWING N°.	SHEET N°.	REVISION
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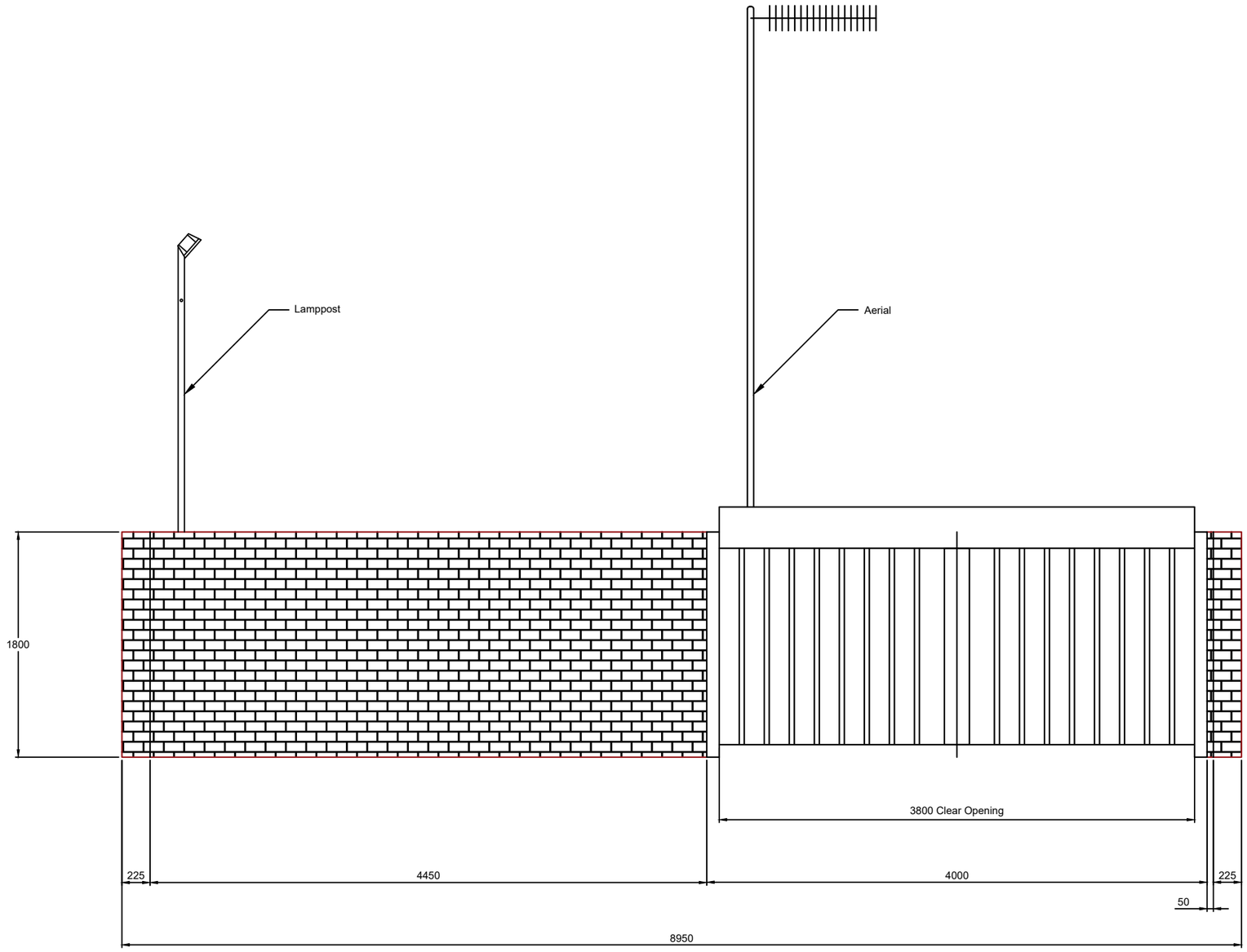

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FOR APPROVAL

PARADIGM Group
35, Bolton Road, Reading
Berkshire
RG2 0NH
0118 9866101
www.pump.net

PROJECT
MILLFIELD NURSERIES
SPALDING COMMON
LINCOLNSHIRE

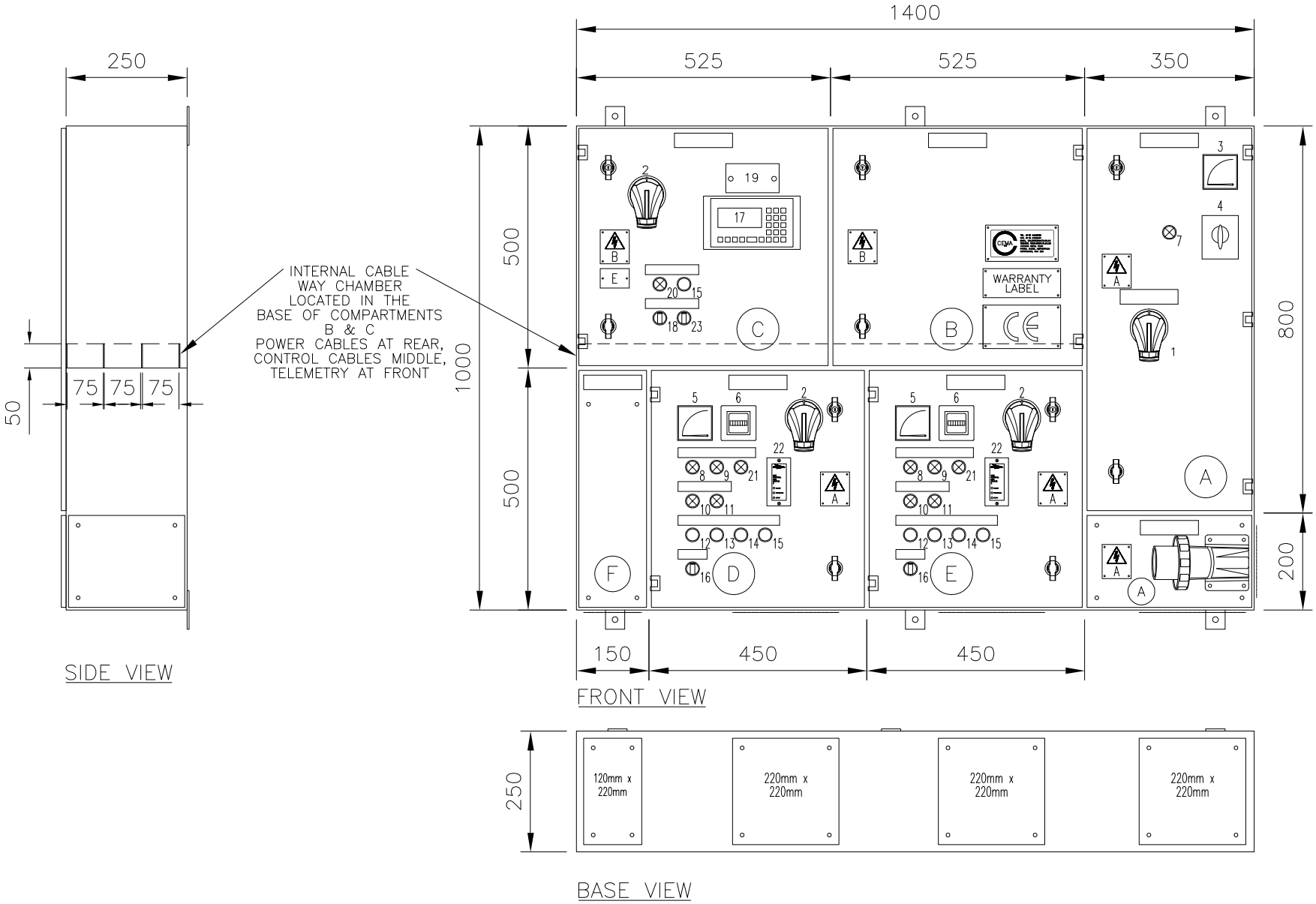
TITLE
Foul Water Pump Station
Front Boundary Details

CLIENT

CONTRACT 715281	APR G.G.	DATE 27/05/2021
SCALE @ A3 NTS	CHK J.A.	DATE 27/05/2021
	DRN T.G.	DATE 27/05/2021

DRAWING N°.	SHEET N°.	REVISION
715281_T2	07	A

Appendix E – Wiring Diagrams



anglianwater one
Thorpe Wood House, Thorpe Wood,
Peterborough, Cambs. PE3 6WT
Tel: 01733 414100 Fax: 01733 414111

ANGLIAN WATER DRAWING No.

REV	DATE	DESCRIPTION	BY	CHK
2P	12.05.21	CUSTOMER COMMENTS; NOW DOL & FLOWMETER REMOVED	IS	HM
1P	11.12.20	ORIGINAL	MK	HM

CEMA PROJECT ENGINEER
H.MANNERING

CEMA LTD CENTRAL ELECTRICAL MANUFACTURING AND AUTOMATION
VICTORIA BUSINESS PARK, PINTAIL CLOSE, NETHERFIELD
NOTTINGHAM NG4 2SG, TEL(0115) 9403532 FAX(0115) 9403534

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CUSTOMER
PARADIGM SYSTEMS

PROJECT TITLE
SFA7 DUAL PUMP (FORM 4) CONTROL PANEL

NAME OF SITE
SITE TBC

ASSEMBLY REFERENCE
SFA7 DUAL PUMP (FORM 4) DOL STARTERS

DRAWING TITLE
GENERAL ARRANGEMENT OF SFA7 DUAL PUMP PUMPING STATION CONTROL PANEL

COMPARTMENT REFERENCE
.

REV
2P

CEMA DRAWING No.
QT117789/GA

COMPONENTS	DESCRIPTION
1	MAINS/OFF/GENERATOR CHANGEOVER ISOLATOR
2	FUSESWITCH
3	0–500V VOLTMETER
4	VOLTMETER 7 POSITION SELECTOR SWITCH
5	AMMETER (DIN72)
6	HOURS RUN METER (DIN48)
7	SURGE PROTECTION FAILED INDICATOR (YELLOW)
8	AUTO AVAILABLE INDICATOR (WHITE)
9	RUNNING INDICATOR (GREEN)
10	MOTOR OVER TEMPERATURE INDICATOR (YELLOW)
11	MOTOR SEAL LEAK INDICATOR (YELLOW)
12	START PUSHBUTTON (WHITE)
13	STOP PUSHBUTTON (BLACK)
14	RESET PUSHBUTTON (YELLOW)
15	LAMP TEST PUSHBUTTON (WHITE)
16	HAND/OFF/AUTO CONTROL SWITCH
17	PULSAR ULTRA LITE
18	PULSAR ULTRA LITE ON/OFF CONTROL SWITCH
19	"DUTY ROTATION VIA THE ULTRASONIC LEVEL CONTROLLER"
20	PUMP STATION RUNNING IN BACKUP CONTROL INDICATOR (YELLOW)
21	TRIPPED INDICATOR (YELLOW)
22	MINICAS UNIT
23	PERSONNEL ON SITE ON/OFF CONTROL SWITCH

CONSTRUCTION NOTES
• PANEL TO BE A PRESS FORMED AND WELDED CONSTRUCTION TO FORM 4 TYPE 2.
• PANEL INGRESS PROTECTION TO BE BSEN 60529, IP54.
• PANEL ARRANGED FOR BOTTOM CABLE ENTRY, FRONT ACCESS ONLY.
• PANEL FINISH EXTERNAL GLOSS ICE PLANT GREEN BS4800 14–C–35.
• PANEL GEARPLATES AND GLANDPLATES TO BE GALVANISED.
• PANEL DOORS FITTED WITH WING LOCKS; ONE LOCKABLE PER DOOR, KEY No.92369
• EARTH BAR 1No. 40mm x 10mm TINNED COPPER BAR.
• CONTROL PANEL DOOR OPENINGS 90°
• CONTROL PANEL THICKNESS; BODY 2mm/DOOR 2mm

LABELS	DESCRIPTION
A	WARNING DANGER 400V
B	WARNING DANGER 230V
C	ATEX LABEL

COMP'T	DESCRIPTION	TAG	RATED (A)	MOTOR (kW)	MOTOR FLC (A)	STARTING METHOD	COPPER (Cu)/ CABLE (mmsq) (OPS WI25–1)	GLANDPLATE EARTH (mmsq) (OPS WI21–2)	COMP'T DEPTH (mm)	GEARPLATE	TIER HEAT LOSS (W)	TIER WEIGHTS (kg)
A	MAINS INCOMER		RATED: 63 FUSED: 32				16	20x5	FULL	TBC	TBC	TBC
A	GENERATOR SOCKET		RATED: 63 FUSED: 32				16	20x5	FULL	TBC		
B	TELEMETRY							6 (M6)	FULL	TBC		
C	ICA SECTION/COMMON CONTROLS		RATED: 20 FUSED: 6				6	6 (M6)	FULL	TBC		
D	PUMP No.1	TBC	RATED: 20 FUSED: 20	2.2	4.5	DOL	6	6 (M6)	FULL	TBC		
E	PUMP No.2	TBC	RATED: 20 FUSED: 20	2.2	4.5	DOL	6	6 (M6)	FULL	TBC		
F	CABLEWAY											
										TOTAL	TBC	TBC

PLEASE NOTE, ALL OF THE ABOVE ARE INDICATIVE. CONFIRMATION SHALL BE POST FINAL DESIGN.

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ANGLIAN WATER DRAWING No.

NOTES:

1. AMBIENT AIR TEMPERATURE SHOULD NOT EXCEED +40°C AND ITS AVERAGE OVER 24 HOURS SHOULD NOT EXCEED 35°C.
   THE LOWER LIMIT OF AMBIENT AIR TEMPERATURE IS –5°C.
2. THE AIR SHOULD BE CLEAN AND RELATIVE HUMIDITY SHOULD NOT EXCEED 50% AT MAXIMUM TEMPERATURE OF 40°C HIGHER RELATIVE HUMIDITY MAY BE PERMITTED AT LOWER TEMPERATURES, I.E. 90% AT 20°C.
   CARE SHOULD BE TAKEN OF MODERATE CONDENSATION WHICH MAY OCCASIONALLY OCCUR DUE TO VARIATIONS IN TEMPERATURE.
3. THE POLLUTION DEGREE NEEDS TO BE EQUAL OR LESS THAN POLLUTION DEGREE 3; NAMELY, CONDUCTIVE POLLUTION OCCURS OR DRY, NON–CONDUCTIVE POLLUTION OCCURS WHICH BECOMES CONDUCTIVE DUE TO CONDENSATION.
4. THE ALTITUDE OF THE SITE OF INSTALLATION SHALL NOT EXCEED 2000M.
5. THE ANTICIPATED NOISE OUTPUT SHALL BE EQUAL OR LESS THAN 55 DECIBELS.

REV	DATE	DESCRIPTION	BY	CHK
2P	12.05.21	CUSTOMER COMMENTS; NOW DOL & FLOWMETER REMOVED	IS	HM
1P	11.12.20	ORIGINAL	MK	HM

CEMA PROJECT ENGINEER
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CUSTOMER
PARADIGM SYSTEMS

PROJECT TITLE
SFA7 DUAL PUMP (FORM 4) CONTROL PANEL

NAME OF SITE
SITE TBC

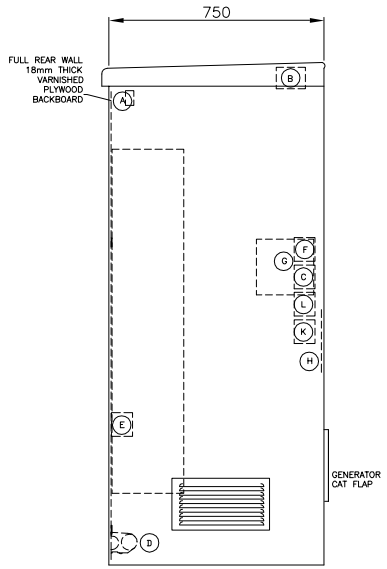
ASSEMBLY REFERENCE
SFA7 DUAL PUMP (FORM 4) DOL STARTERS

DRAWING TITLE
GENERAL ARRANGEMENT OF SFA7 DUAL PUMP PUMPING STATION CONTROL PANEL

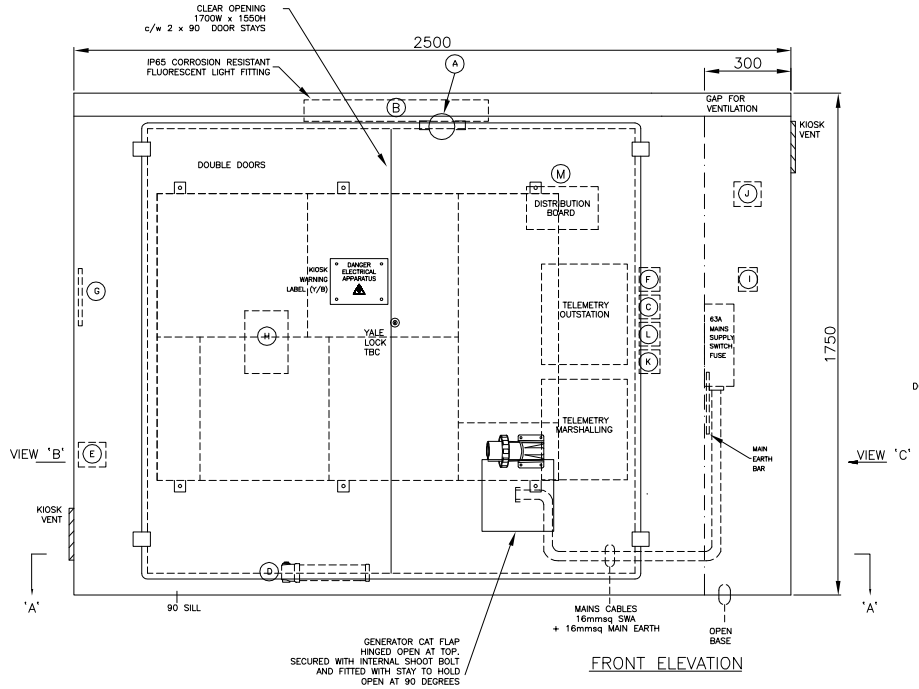
COMPARTMENT REFERENCE
.

REV
2P

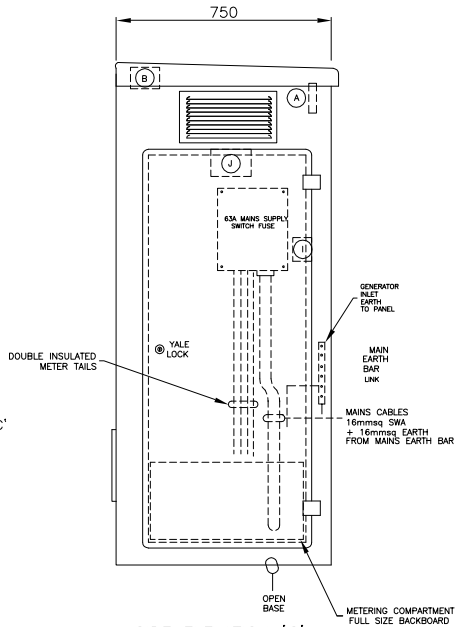
CEMA DRAWING No.
QT117789/GA



SIDE ELEVATION 'B'



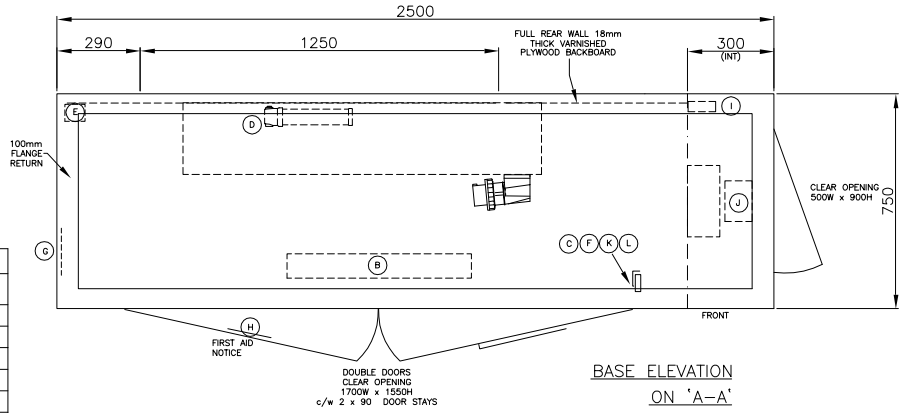
FRONT ELEVATION



SIDE ELEVATION 'C'

CONSTRUCTION NOTES
1. KIOSK TO BE GRP CONSTRUCTION
2. KIOSK COLOUR TO BE –EXTERNAL DARK GREEN BS4800 SHADE 14–C–39 INTERNAL–WHITE
3. ALL CABLING WITHIN KIOSK TO BE 100% MECHANICALLY PROTECTED
4. KIOSK LOCK TYPE TO BE YALE LOCKS

COMPONENTS	DESCRIPTION
A	DIST BOARD FEED VIA 90 ANGLE CONDUIT THROUGH BOX
B	KIOSK LIGHT
C	LIGHT SWITCH
D	KIOSK HEATER
E	KIOSK HEATER FUSE SPUR
F	FROST STAT
G	KIOSK DOCUMENT POCKET
H	FIRST AID NOTICE
I	METERING BULKHEAD LIGHT SWITCH
J	METERING BULKHEAD LIGHT
K	240V RCD SOCKET
L	TELEM FUSE SPUR
M	230VAC DISTRIBUTION BOARD



BASE ELEVATION ON 'A–A'

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REV	DATE	DESCRIPTION	BY	CHK
2P	12.05.21	CUSTOMER COMMENTS; NOW DOL & FLOWMETER REMOVED	IS	HM
1P	11.12.20	ORIGINAL	MK	HM

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CUSTOMER
PARADIGM

PROJECT TITLE
SFA7 DUAL PUMP (FORM 4) CONTROL PANEL

NAME OF SITE
SITE TBC

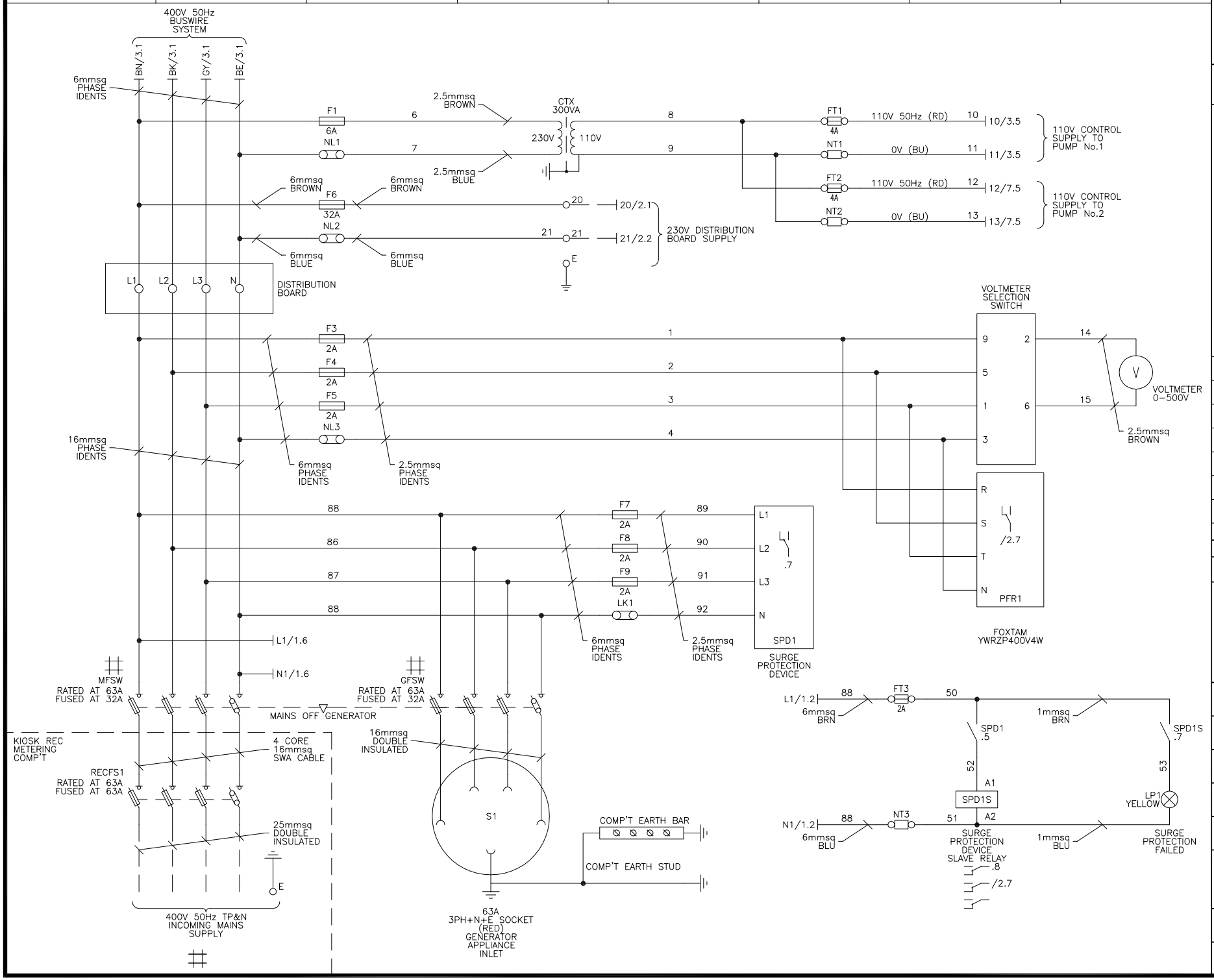
ASSEMBLY REFERENCE
SFA7 DUAL PUMP (FORM 4) DOL STARTERS

DRAWING TITLE
GENERAL ARRANGEMENT OF SFA7 DUAL PUMP PUMPING STATION CONTROL PANEL

COMPARTMENT REFERENCE
.

REV
2P

CEMA DRAWING No.
QT117789/GA 3 OF 3



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ANGLIAN WATER DRAWING No.

☒ DOOR INTERLOCKED # DOOR MOUNTED

UNLESS SPECIFIED ALL CONTROL CABLES TO BE:
110V 50Hz – 1mmsq RED
0V – 1mmsq BLUE
24VDC +VE – 1mmsq YELLOW
24VDC –VE – 1mmsq BLUE
TELEMETRY – 1mmsq PINK
4–20mA – 2 CORE SCREEN

REV	DATE	DESCRIPTION	BY	CHK
2P	12.05.21	CUSTOMER COMMENTS; NOW DOL & FLOWMETER REMOVED	IS	HM
1P	11.12.20	ORIGINAL	MK	HM

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CUSTOMER
PARADIGM SYSTEMS

PROJECT TITLE
SFA7 DUAL PUMP (FORM 4) CONTROL PANEL

NAME OF SITE
SITE TBC

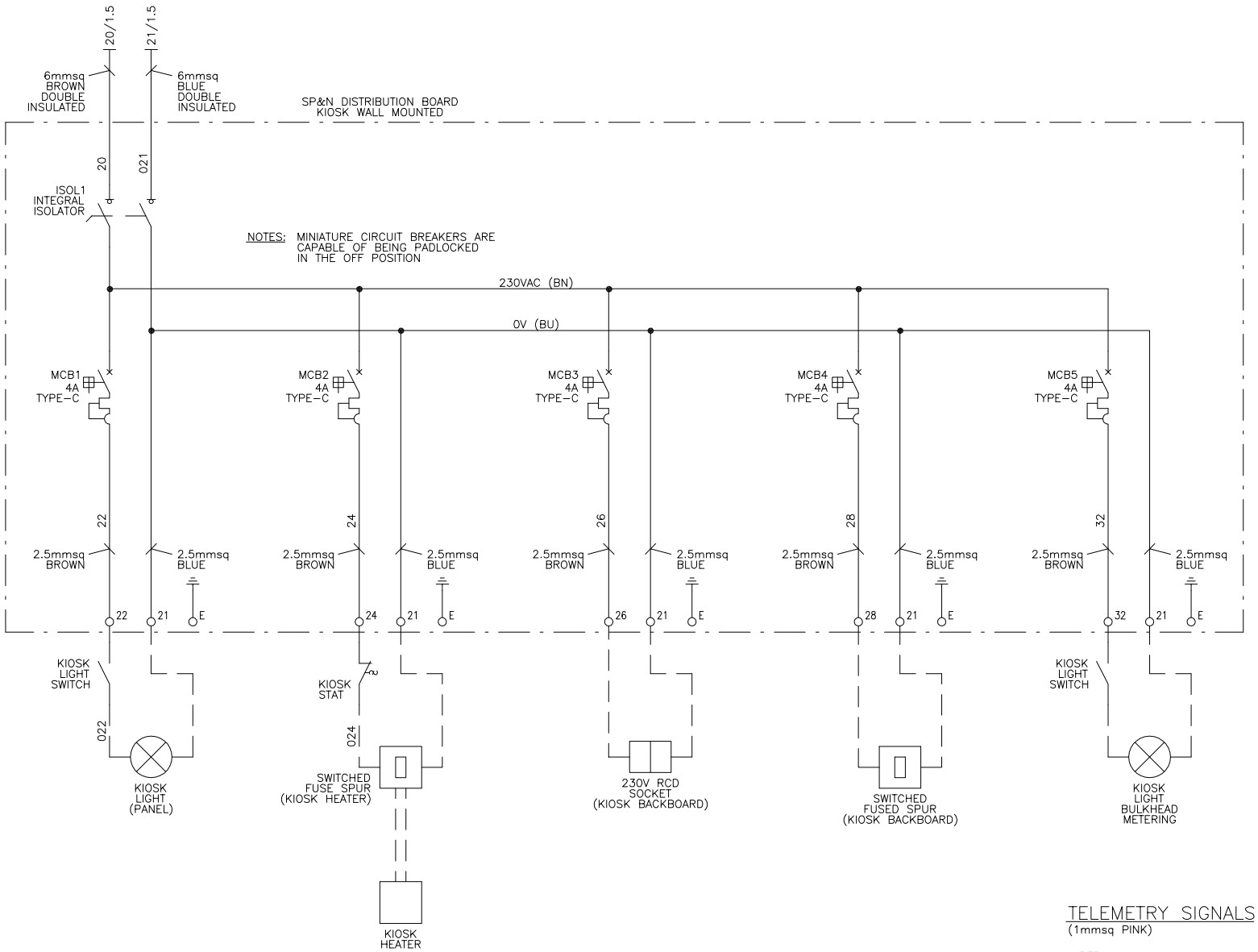
ASSEMBLY REFERENCE
SFA7 DUAL PUMP (FORM 4) DOL STARTERS

DRAWING TITLE
CIRCUIT DIAGRAM OF MAINS/GENERATOR INCOMER

COMPARTMENT REFERENCE
A

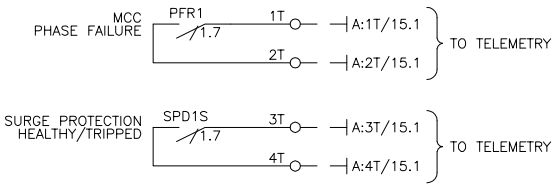
REV
2P

CEMA DRAWING No.
QT117789/SW



TELEMETRY SIGNALS

(1mmsq PINK)



TELEMETRY SIGNALS POWERED BY TELEMETRY UNIT AT 12/24VDC

NOTE:-WHERE REQUIRED TELEMETRY OUTPUT INTERPOSING RELAYS TO BE POWERED BY TELEMETRY UNIT AT 24VDC

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ANGLIAN WATER DRAWING No.

☒ DOOR INTERLOCKED ⧺ DOOR MOUNTED

UNLESS SPECIFIED ALL CONTROL CABLES TO BE:
110V 50Hz – 1mmsq RED
0V – 1mmsq BLUE
24VDC +VE – 1mmsq YELLOW
24VDC –VE – 1mmsq BLUE
TELEMETRY – 1mmsq PINK
4–20mA – 2 CORE SCREEN

REV	DATE	DESCRIPTION	BY	CHK
2P	12.05.21	CUSTOMER COMMENTS; NOW DOL & FLOWMETER REMOVED	IS	HM
1P	11.12.20	ORIGINAL	MK	HM

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PARADIGM SYSTEMS

PROJECT TITLE
SFA7 DUAL PUMP (FORM 4) CONTROL PANEL

NAME OF SITE
SITE TBC

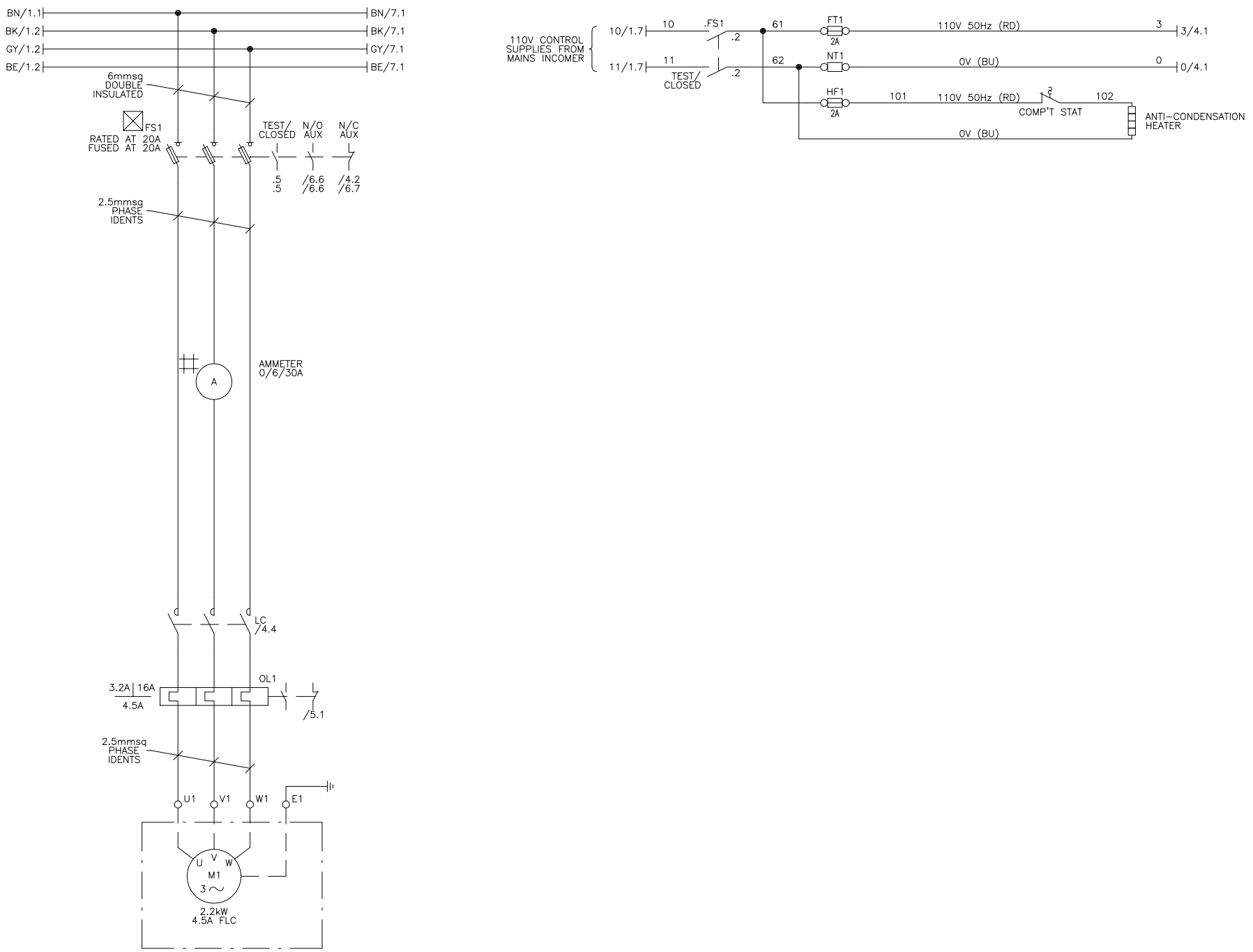
ASSEMBLY REFERENCE
SFA7 DUAL PUMP (FORM 4) DOL STARTERS

DRAWING TITLE
CIRCUIT DIAGRAM OF 230VAC DISTRIBUTION BOARD

COMPARTMENT REFERENCE: A

REV: 2P

CEMA DRAWING No.
QT117789/SW



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ANGLIAN WATER DRAWING No.

DOOR INTERLOCKED DOOR MOUNTED

UNLESS SPECIFIED ALL CONTROL CABLES TO BE:
110V 50Hz – 1mmsq RED
0V – 1mmsq BLUE
24VDC +VE – 1mmsq YELLOW
24VDC –VE – 1mmsq BLUE
TELEMETRY – 1mmsq PINK
4–20mA – 2 CORE SCREEN

REV	DATE	DESCRIPTION	BY	CHK
2P	12.05.21	CUSTOMER COMMENTS; NOW DOL & FLOWMETER REMOVED	IS	HM
1P	11.12.20	ORIGINAL	MK	HM

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CUSTOMER
PARADIGM SYSTEMS

PROJECT TITLE
SFA7 DUAL PUMP (FORM 4) CONTROL PANEL

NAME OF SITE
SITE TBC

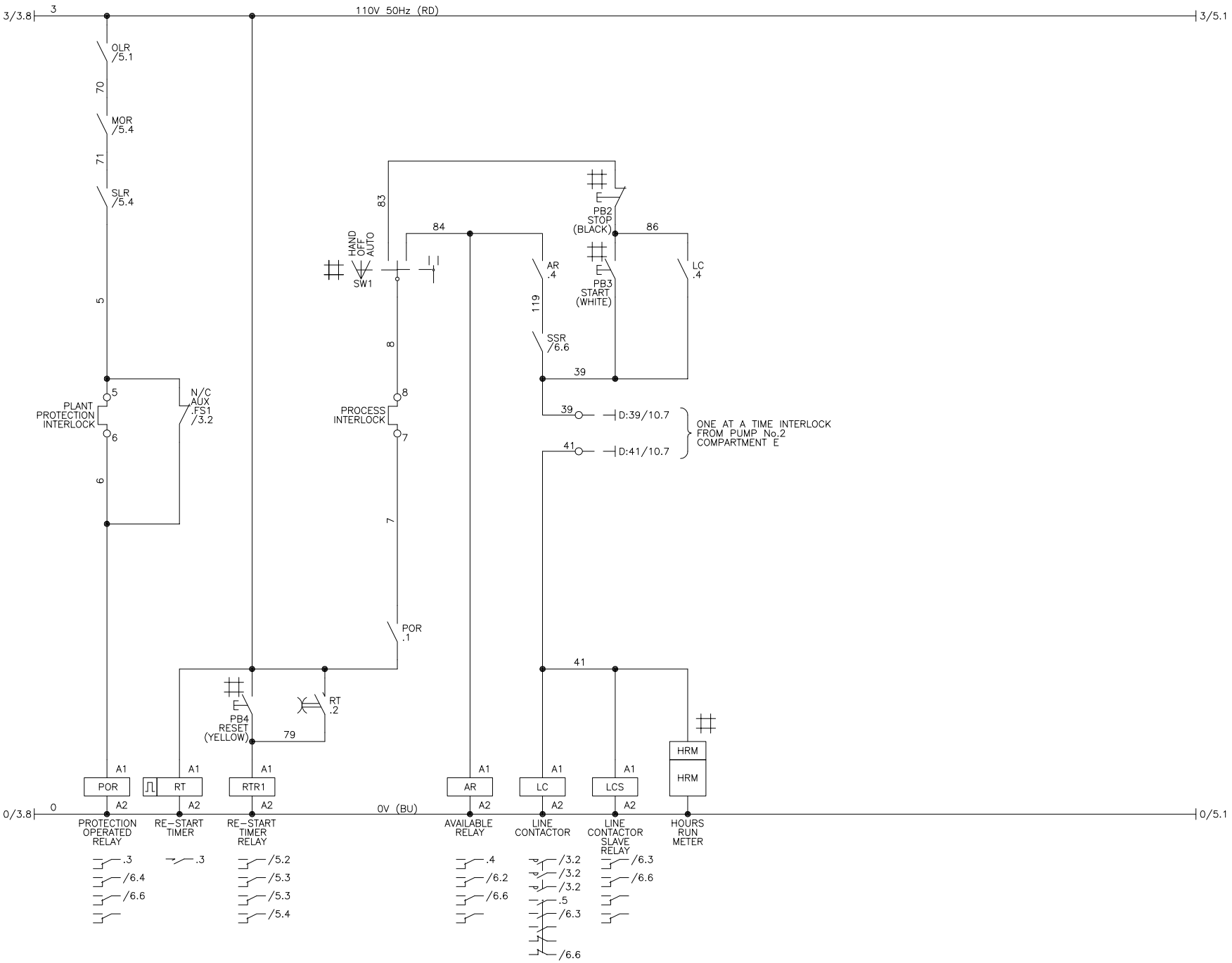
ASSEMBLY REFERENCE
SFA7 DUAL PUMP (FORM 4) DOL STARTERS

DRAWING TITLE
CIRCUIT DIAGRAM OF ANGLIAN WATER SFA7 DUAL DOL PUMP CONTROL PANEL

COMPARTMENT REFERENCE
D

REV
2P

CEMA DRAWING No.
QT117789/SW



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Peterborough, Cambs. PE3 6WT
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ANGLIAN WATER DRAWING No.

DOOR INTERLOCKED DOOR MOUNTED

UNLESS SPECIFIED ALL CONTROL CABLES TO BE:
110V 50Hz – 1mmsq RED
0V – 1mmsq BLUE
24VDC +VE – 1mmsq YELLOW
24VDC –VE – 1mmsq BLUE
TELEMETRY – 1mmsq PINK
4–20mA – 2 CORE SCREEN

REV	DATE	DESCRIPTION	BY	CHK
2P	12.05.21	CUSTOMER COMMENTS; NOW DOL & FLOWMETER REMOVED	IS	HM
1P	11.12.20	ORIGINAL	MK	HM

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CUSTOMER
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PROJECT TITLE
SFA7 DUAL PUMP (FORM 4) CONTROL PANEL

NAME OF SITE
SITE TBC

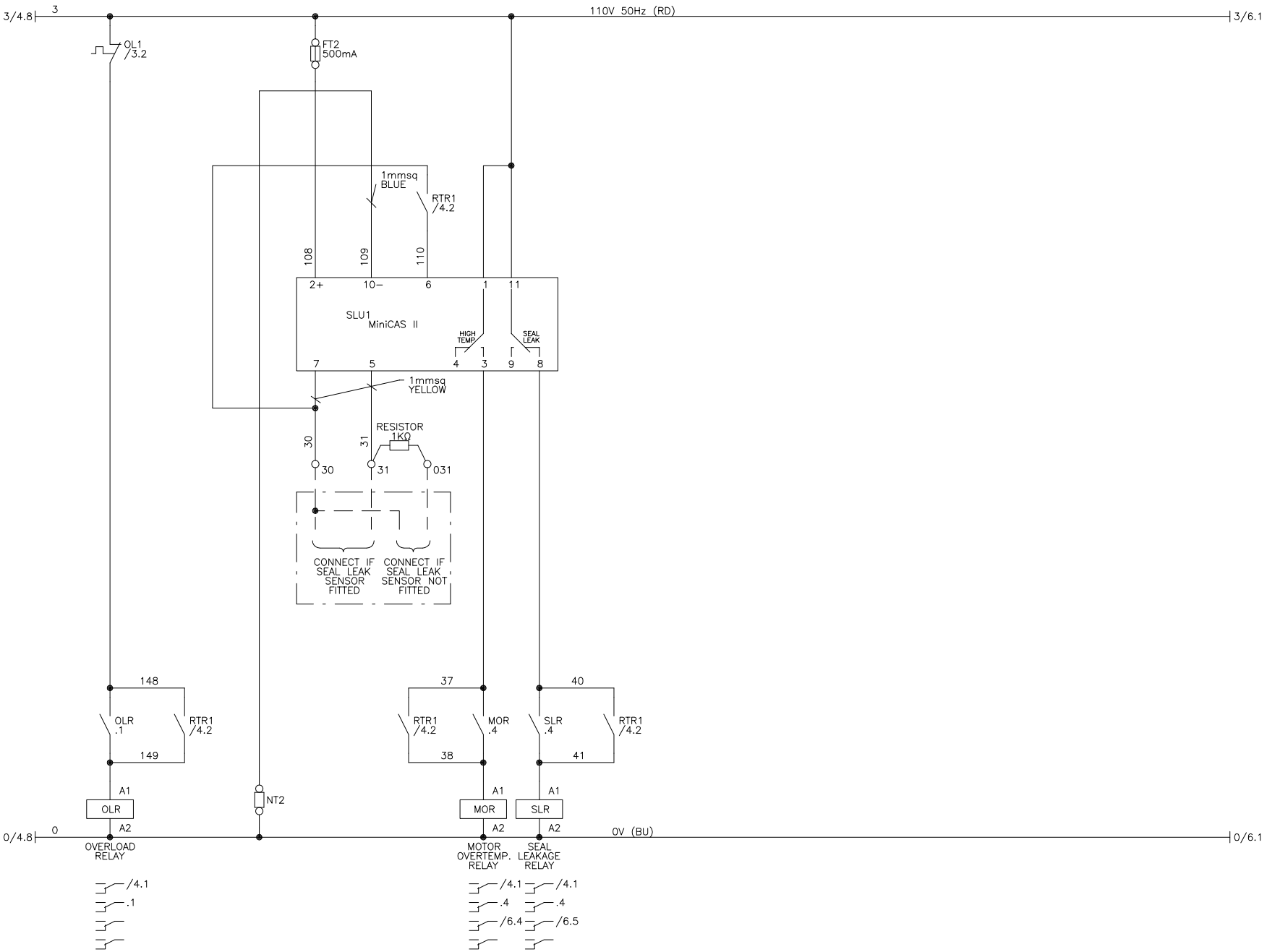
ASSEMBLY REFERENCE
SFA7 DUAL PUMP (FORM 4) DOL STARTERS

DRAWING TITLE
CIRCUIT DIAGRAM OF ANGLIAN WATER SFA7 DUAL DOL PUMP CONTROL PANEL

COMPARTMENT REFERENCE
D

REV
2P

CEMA DRAWING No.
QT117789/SW



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ANGLIAN WATER DRAWING No.

☒ DOOR INTERLOCKED # DOOR MOUNTED

UNLESS SPECIFIED ALL CONTROL CABLES TO BE:
110V 50Hz – 1mmsq RED
0V – 1mmsq BLUE
24VDC +VE – 1mmsq YELLOW
24VDC –VE – 1mmsq BLUE
TELEMETRY – 1mmsq PINK
4–20mA – 2 CORE SCREEN

REV	DATE	DESCRIPTION	BY	CHK
2P	12.05.21	CUSTOMER COMMENTS; NOW DOL & FLOWMETER REMOVED	IS	HM
1P	11.12.20	ORIGINAL	MK	HM

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CUSTOMER
PARADIGM SYSTEMS

PROJECT TITLE
SFA7 DUAL PUMP (FORM 4) CONTROL PANEL

NAME OF SITE
SITE TBC

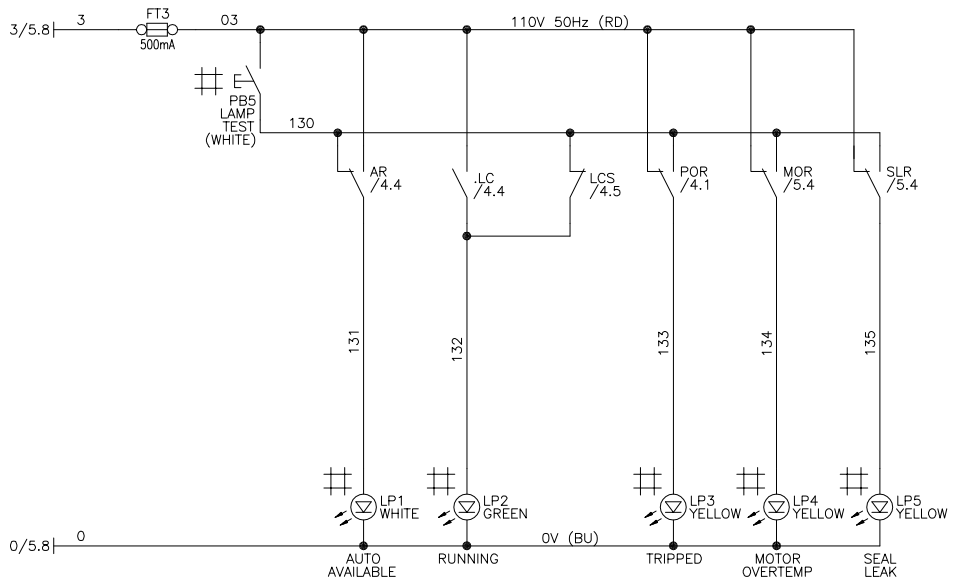
ASSEMBLY REFERENCE
SFA7 DUAL PUMP (FORM 4) DOL STARTERS

DRAWING TITLE
CIRCUIT DIAGRAM OF ANGLIAN WATER SFA7 DUAL DOL PUMP CONTROL PANEL

COMPARTMENT REFERENCE
D

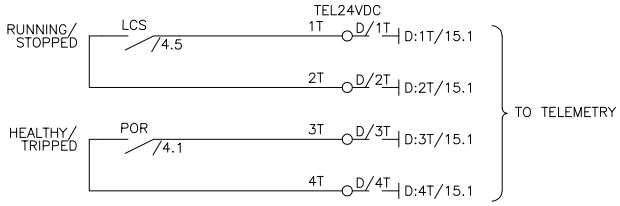
REV
2P

CEMA DRAWING No.
QT117789/SW



TELEMETRY SIGNALS

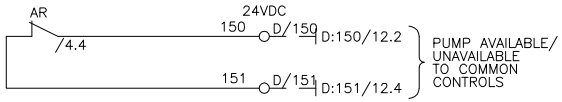
(1mmsq PINK)



TELEMETRY SIGNALS POWERED BY TELEMETRY UNIT AT 12/24VDC

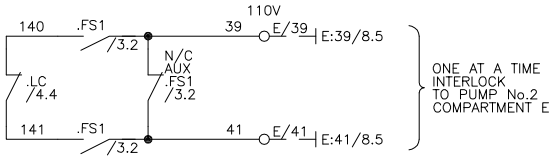
CONTROL SIGNALS

(1mmsq YELLOW)



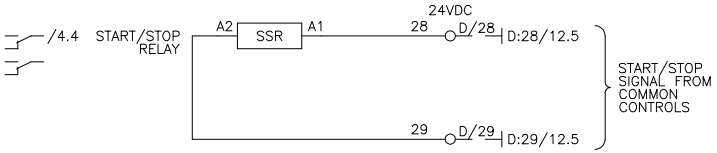
CONTROL SIGNALS

(1mmsq RED)



CONTROL SIGNALS

(1mmsq YELLOW, BLUE)



NOTE – WHERE REQUIRED TELEMETRY OUTPUT INTERPOSING RELAYS TO BE POWERED BY TELEMETRY UNIT AT 24VDC.

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ANGLIAN WATER DRAWING No.

☒ DOOR INTERLOCKED # DOOR MOUNTED

UNLESS SPECIFIED ALL CONTROL CABLES TO BE:
110V 50Hz – 1mmsq RED
0V – 1mmsq BLUE
24VDC +VE – 1mmsq YELLOW
24VDC –VE – 1mmsq BLUE
TELEMETRY – 1mmsq PINK
4–20mA – 2 CORE SCREEN

REV	DATE	DESCRIPTION	BY	CHK
2P	12.05.21	CUSTOMER COMMENTS; NOW DOL & FLOWMETER REMOVED	IS	HM
1P	11.12.20	ORIGINAL	MK	HM

CEMA PROJECT ENGINEER
H.MANNERING

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CUSTOMER
PARADIGM SYSTEMS

PROJECT TITLE
SFA7 DUAL PUMP (FORM 4)
CONTROL PANEL

NAME OF SITE
SITE TBC

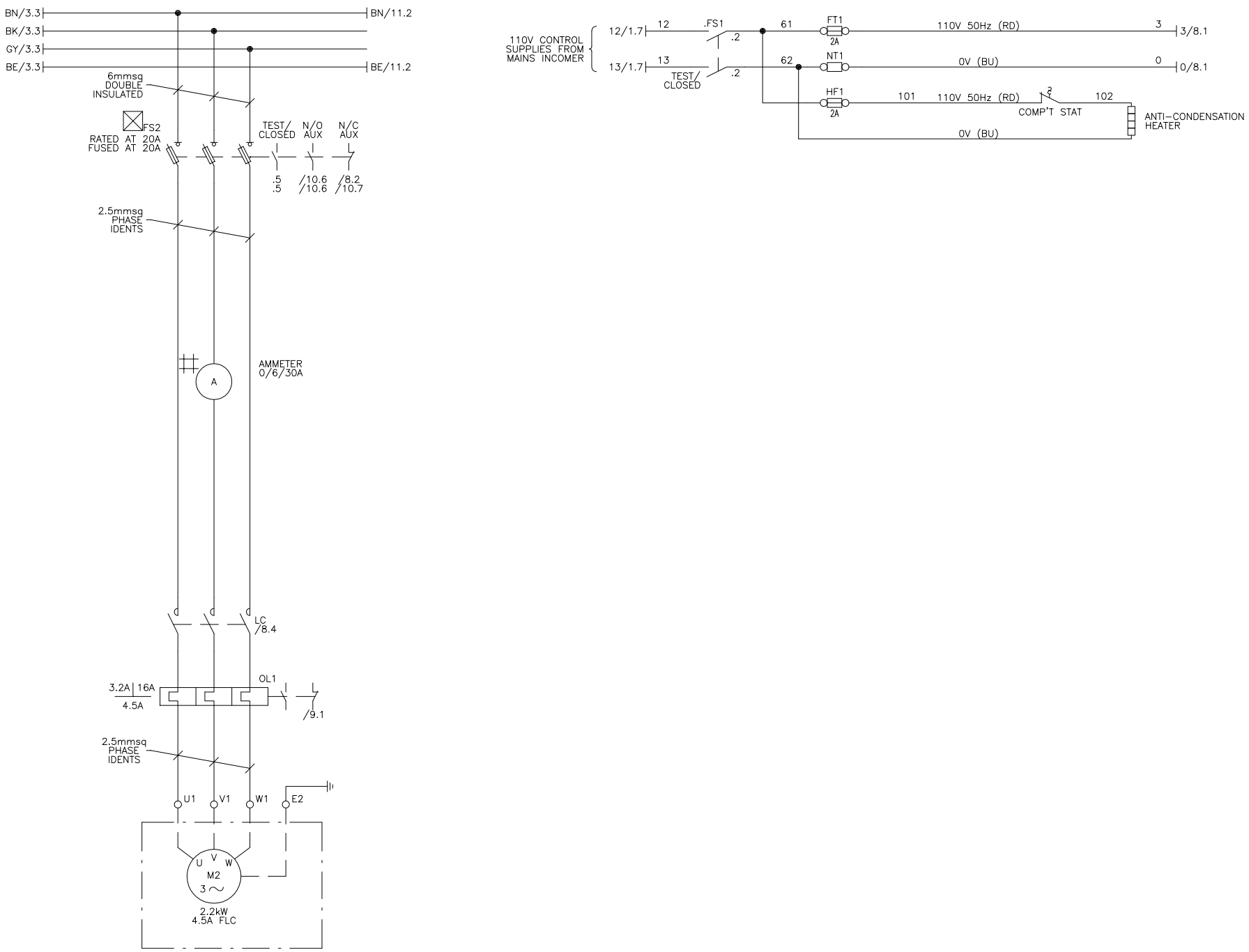
ASSEMBLY REFERENCE
SFA7 DUAL PUMP (FORM 4)
DOL STARTERS

DRAWING TITLE
CIRCUIT DIAGRAM OF
ANGLIAN WATER SFA7
DUAL DOL PUMP CONTROL PANEL

COMPARTMENT REFERENCE
D

REV
2P

CEMA DRAWING No.
QT117789/SW



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Peterborough, Cambs. PE3 6WT
Tel: 01733 414100 Fax: 01733 414111

ANGLIAN WATER DRAWING No.

DOOR INTERLOCKED DOOR MOUNTED

UNLESS SPECIFIED ALL CONTROL CABLES TO BE:
110V 50Hz – 1mmsq RED
0V – 1mmsq BLUE
24VDC +VE – 1mmsq YELLOW
24VDC –VE – 1mmsq BLUE
TELEMETRY – 1mmsq PINK
4–20mA – 2 CORE SCREEN

REV	DATE	DESCRIPTION	BY	CHK
2P	12.05.21	CUSTOMER COMMENTS; NOW DOL & FLOWMETER REMOVED	IS	HM
1P	11.12.20	ORIGINAL	MK	HM

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CUSTOMER
PARADIGM SYSTEMS

PROJECT TITLE
SFA7 DUAL PUMP (FORM 4) CONTROL PANEL

NAME OF SITE
SITE TBC

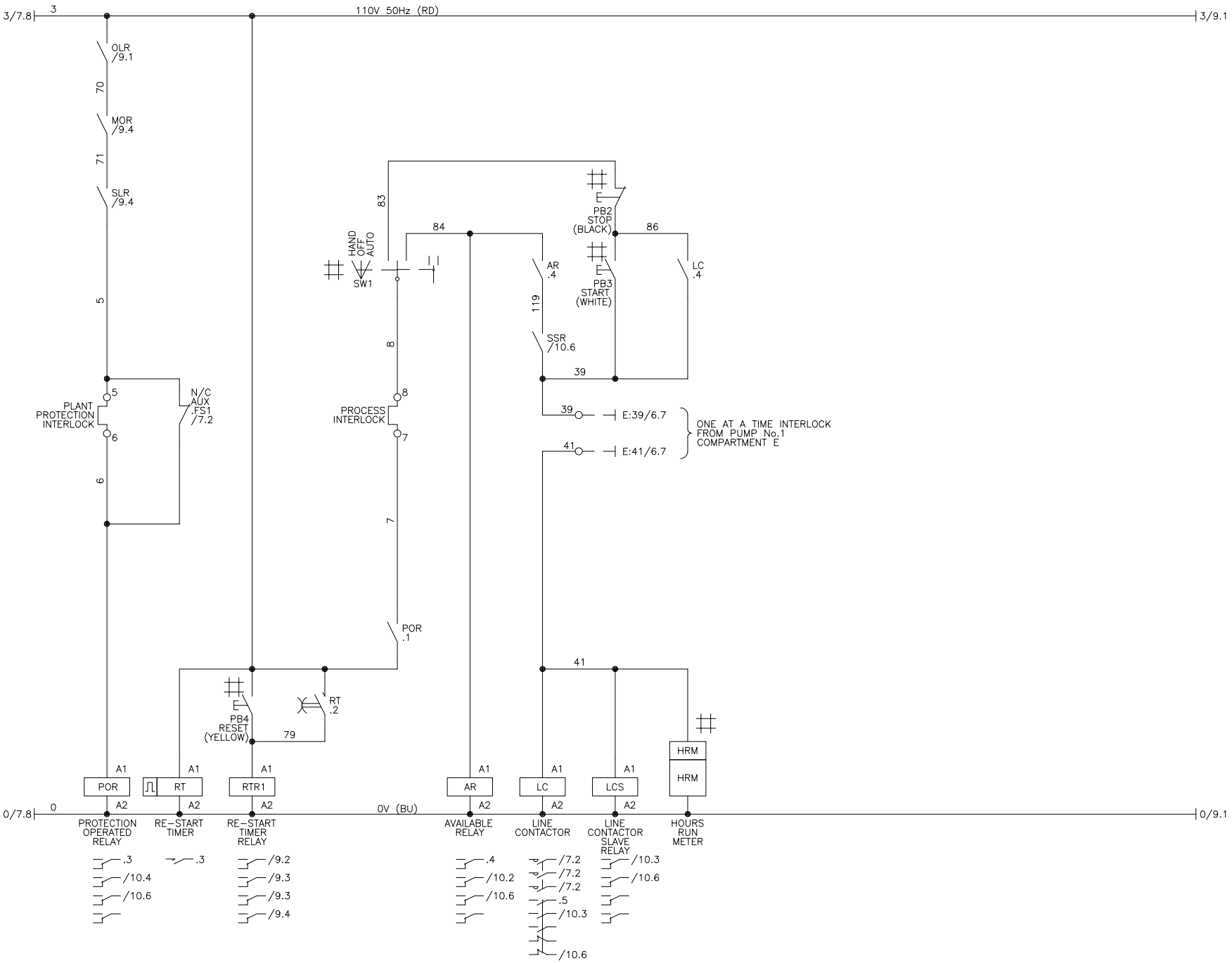
ASSEMBLY REFERENCE
SFA7 DUAL PUMP (FORM 4) DOL STARTERS

DRAWING TITLE
CIRCUIT DIAGRAM OF ANGLIAN WATER SFA7 DUAL DOL PUMP CONTROL PANEL

COMPARTMENT REFERENCE
E

REV
2P

CEMA DRAWING No.
QT117789/SW



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Peterborough, Cambs. PE3 6WT
Tel: 01733 414100 Fax: 01733 414111

ANGLIAN WATER DRAWING No.

☒ DOOR INTERLOCKED # DOOR MOUNTED

UNLESS SPECIFIED ALL CONTROL CABLES TO BE:
110V 50Hz – 1mmsq RED
0V – 1mmsq BLUE
24VDC +VE – 1mmsq YELLOW
24VDC –VE – 1mmsq BLUE
TELEMETRY – 1mmsq PINK
4–20mA – 2 CORE SCREEN

REV	DATE	DESCRIPTION	BY	CHK
2P	12.05.21	CUSTOMER COMMENTS; NOW DOL & FLOWMETER REMOVED	IS	HM
1P	11.12.20	ORIGINAL	MK	HM

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CUSTOMER
PARADIGM SYSTEMS

PROJECT TITLE
SFA7 DUAL PUMP (FORM 4) CONTROL PANEL

NAME OF SITE
SITE TBC

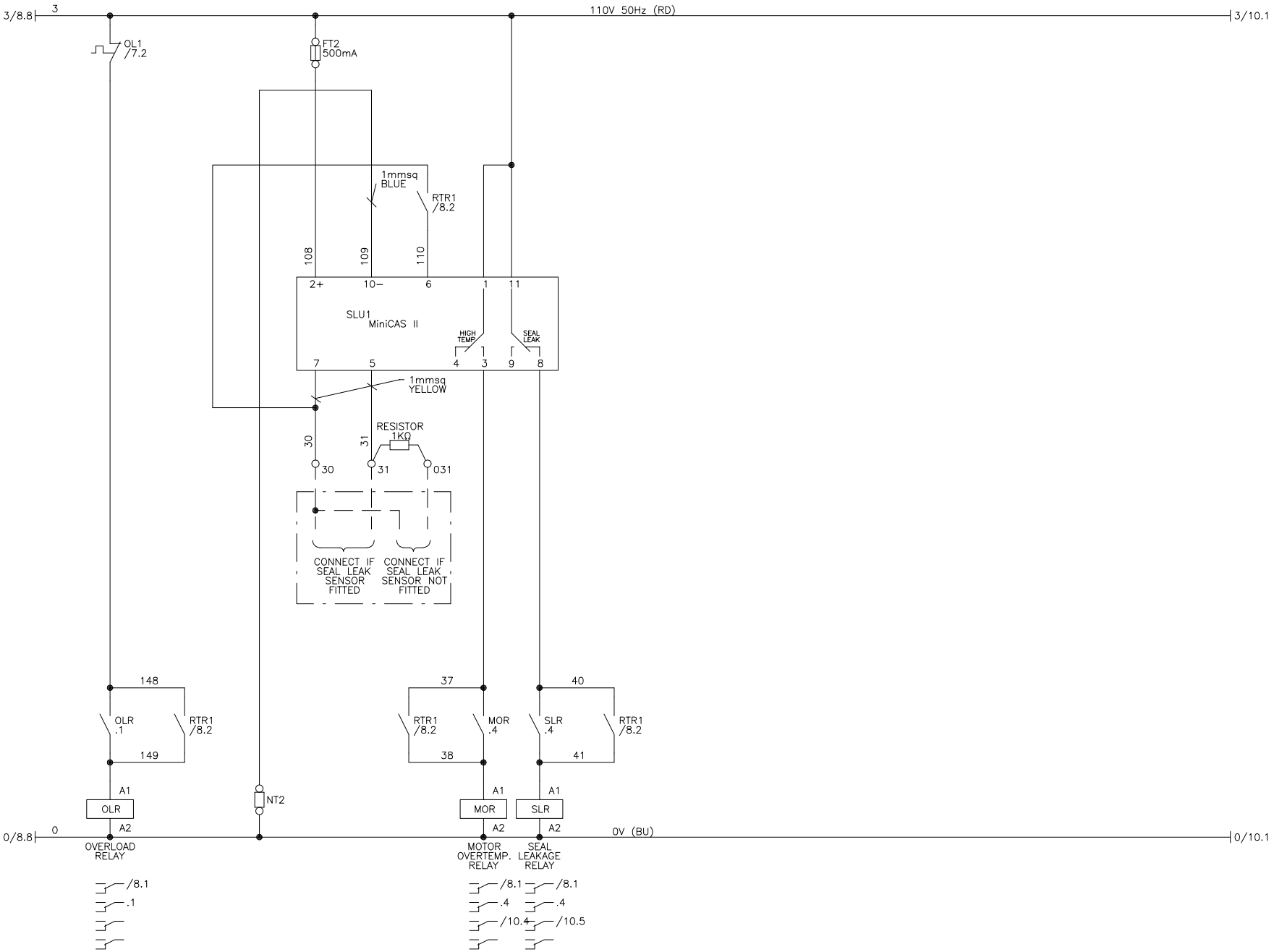
ASSEMBLY REFERENCE
SFA7 DUAL PUMP (FORM 4) DOL STARTERS

DRAWING TITLE
CIRCUIT DIAGRAM OF ANGLIAN WATER SFA7 DUAL DOL PUMP CONTROL PANEL

COMPARTMENT REFERENCE
E

REV
2P

CEMA DRAWING No.
QT117789/SW



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CUSTOMER
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PROJECT TITLE
SFA7 DUAL PUMP (FORM 4) CONTROL PANEL

NAME OF SITE
SITE TBC

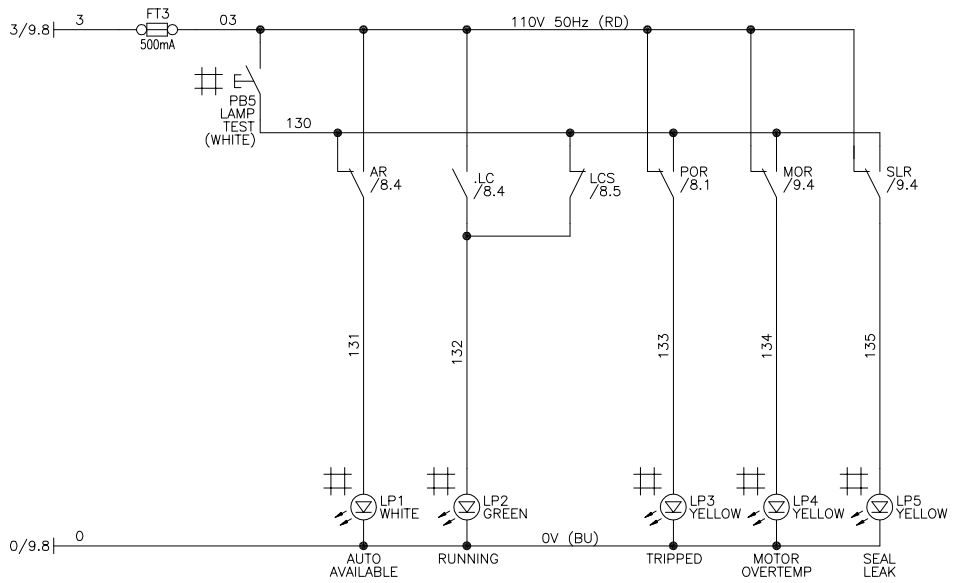
ASSEMBLY REFERENCE
SFA7 DUAL PUMP (FORM 4) DOL STARTERS

DRAWING TITLE
CIRCUIT DIAGRAM OF ANGLIAN WATER SFA7 DUAL DOL PUMP CONTROL PANEL

COMPARTMENT REFERENCE
E

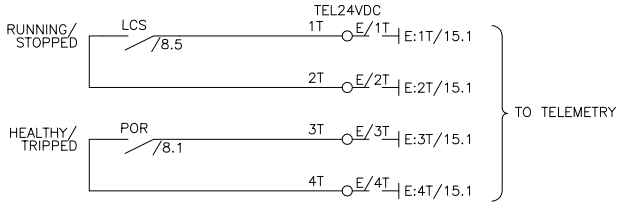
REV
2P

CEMA DRAWING No.
QT117789/SW



TELEMETRY SIGNALS

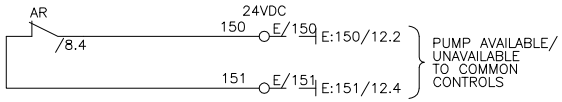
(1mmsq PINK)



TELEMETRY SIGNALS POWERED BY TELEMETRY UNIT AT 12/24VDC

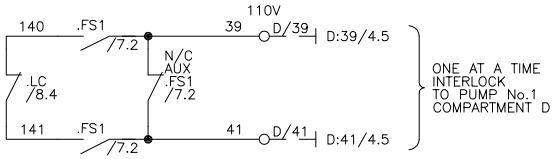
CONTROL SIGNALS

(1mmsq YELLOW)



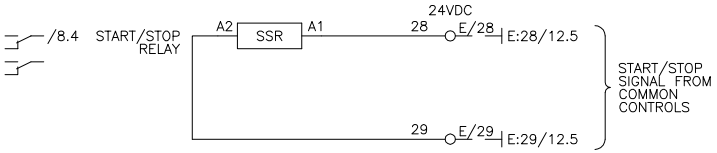
CONTROL SIGNALS

(1mmsq RED)



CONTROL SIGNALS

(1mmsq YELLOW, BLUE)



NOTE – WHERE REQUIRED TELEMETRY OUTPUT INTERPOSING RELAYS TO BE POWERED BY TELEMETRY UNIT AT 24VDC.

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ANGLIAN WATER DRAWING No.

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UNLESS SPECIFIED ALL CONTROL CABLES TO BE:
110V 50Hz – 1mmsq RED
0V – 1mmsq BLUE
24VDC +VE – 1mmsq YELLOW
24VDC –VE – 1mmsq BLUE
TELEMETRY – 1mmsq PINK
4–20mA – 2 CORE SCREEN

REV	DATE	DESCRIPTION	BY	CHK
2P	12.05.21	CUSTOMER COMMENTS; NOW DOL & FLOWMETER REMOVED	IS	HM
1P	11.12.20	ORIGINAL	MK	HM

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CUSTOMER
PARADIGM SYSTEMS

PROJECT TITLE
SFA7 DUAL PUMP (FORM 4)
CONTROL PANEL

NAME OF SITE
SITE TBC

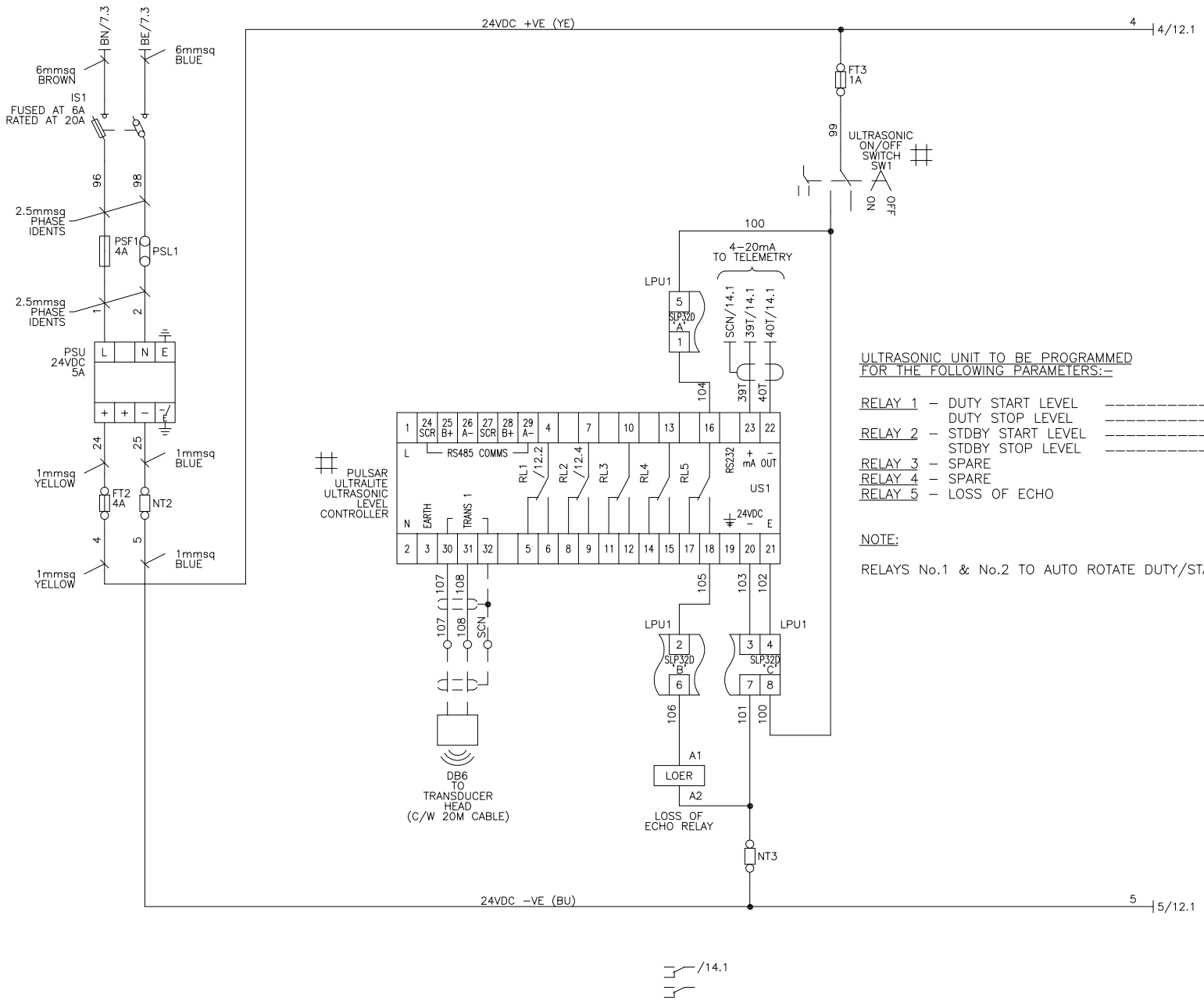
ASSEMBLY REFERENCE
SFA7 DUAL PUMP (FORM 4)
DOL STARTERS

DRAWING TITLE
CIRCUIT DIAGRAM OF
ANGLIAN WATER SFA7
DUAL DOL PUMP CONTROL PANEL

COMPARTMENT REFERENCE
E

REV
2P

CEMA DRAWING No.
QT117789/SW



ULTRASONIC UNIT TO BE PROGRAMMED FOR THE FOLLOWING PARAMETERS:–

RELAY 1 – DUTY START LEVEL _____Metres
DUTY STOP LEVEL _____Metres
RELAY 2 – STDBY START LEVEL _____Metres
STDBY STOP LEVEL _____Metres
RELAY 3 – SPARE
RELAY 4 – SPARE
RELAY 5 – LOSS OF ECHO

NOTE:

RELAYS No.1 & No.2 TO AUTO ROTATE DUTY/STANDBY

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DOOR INTERLOCKED DOOR MOUNTED

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0V – 1mmsq BLUE
24VDC +VE – 1mmsq YELLOW
24VDC –VE – 1mmsq BLUE
TELEMETRY – 1mmsq PINK
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PARADIGM SYSTEMS

PROJECT TITLE
SFA7 DUAL PUMP (FORM 4) CONTROL PANEL

NAME OF SITE
SITE TBC

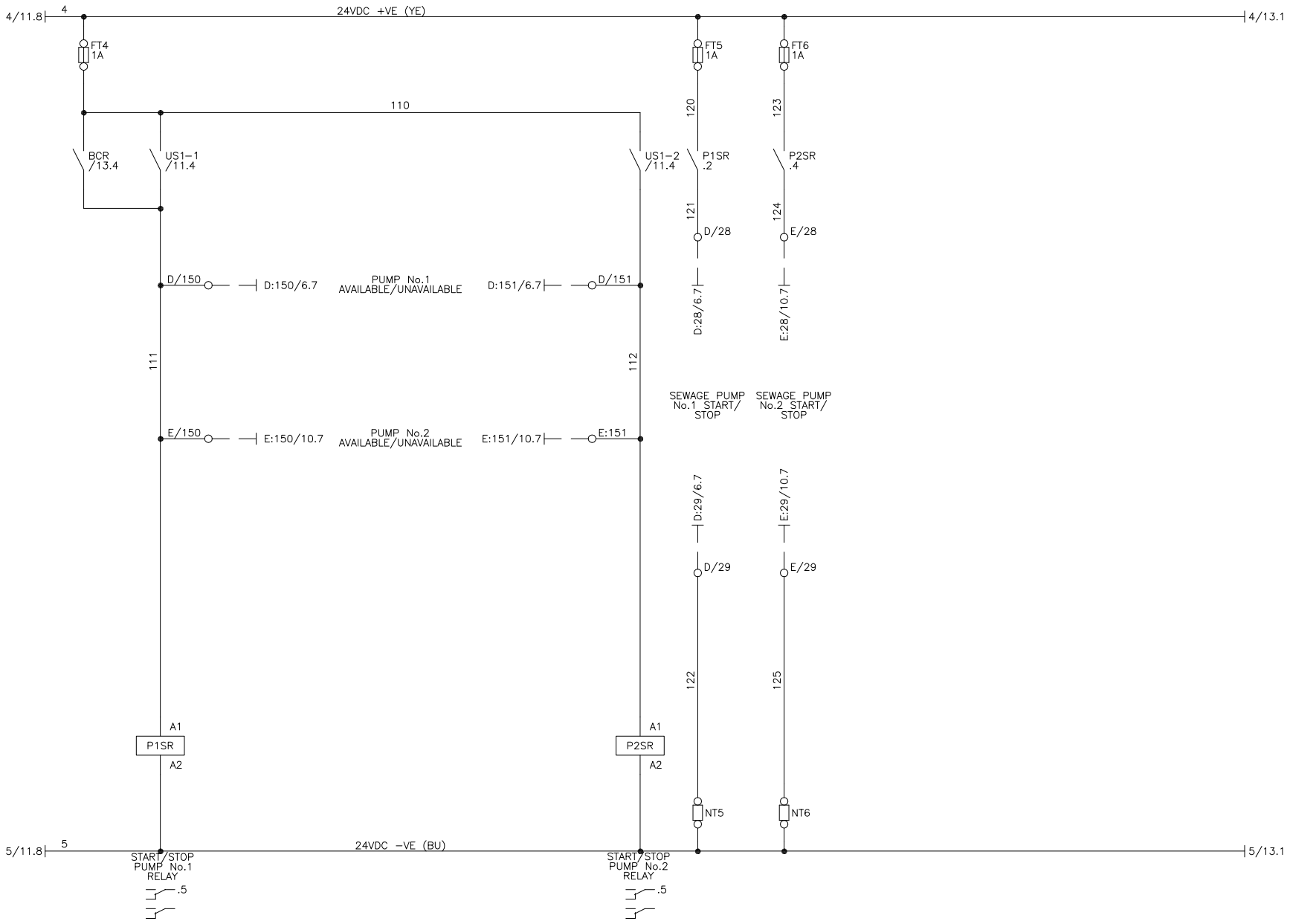
ASSEMBLY REFERENCE
SFA7 DUAL PUMP (FORM 4) DOL STARTERS

DRAWING TITLE
CIRCUIT DIAGRAM OF COMMON CONTROLS

COMPARTMENT REFERENCE
C

REV
2P

CEMA DRAWING No.
QT117789/SW



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TELEMETRY – 1mmsq PINK
4–20mA – 2 CORE SCREEN

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CUSTOMER
PARADIGM SYSTEMS

PROJECT TITLE
SFA7 DUAL PUMP (FORM 4)
CONTROL PANEL

NAME OF SITE
SITE TBC

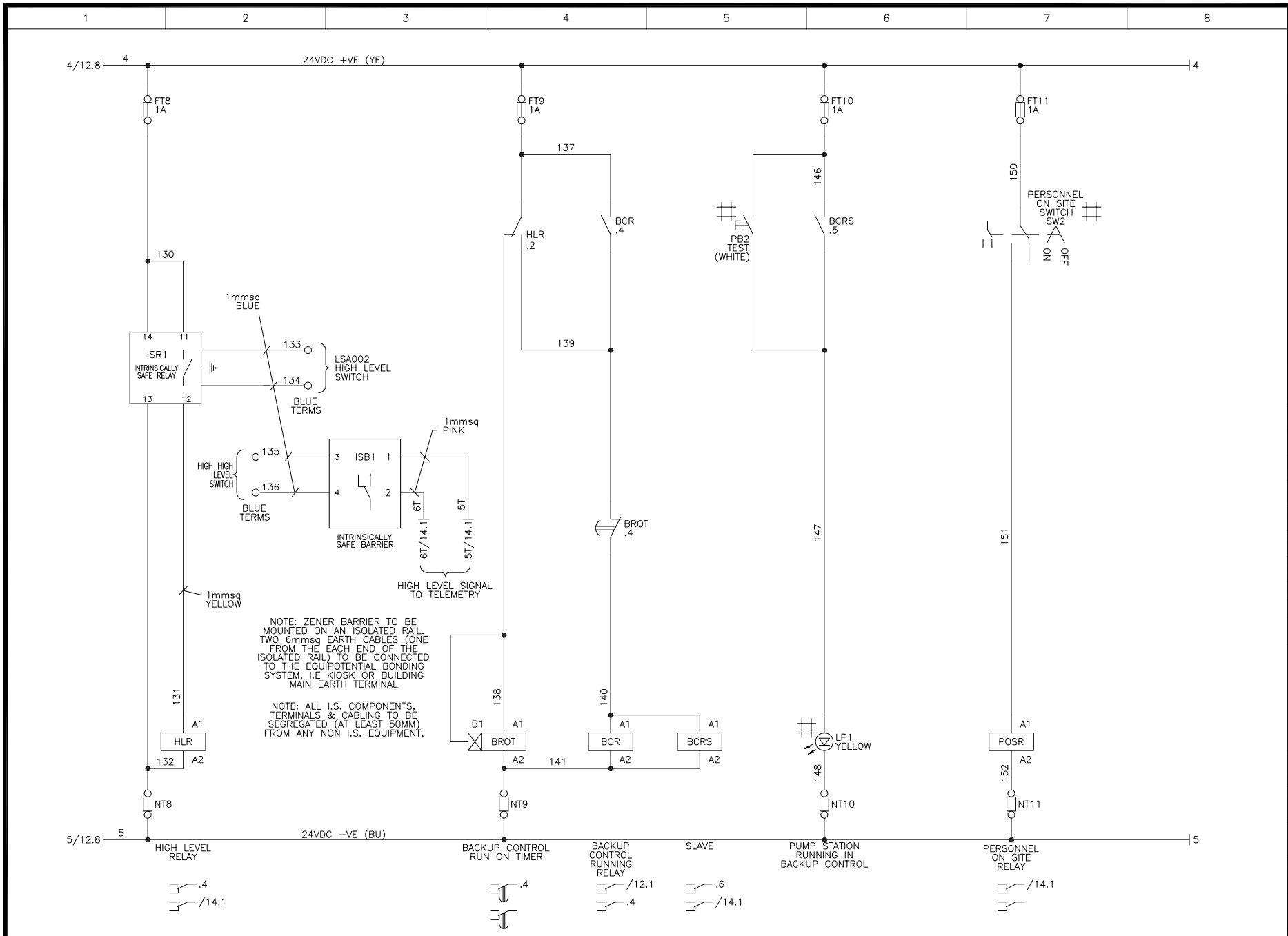
ASSEMBLY REFERENCE
SFA7 DUAL PUMP (FORM 4)
DOL STARTERS

DRAWING TITLE
CIRCUIT DIAGRAM OF
COMMON CONTROLS

COMPARTMENT REFERENCE
C

REV
2P

CEMA DRAWING No.
QT117789/SW



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TELEMETRY – 1mmsq PINK
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CUSTOMER
PARADIGM SYSTEMS

PROJECT TITLE
SFA7 DUAL PUMP (FORM 4) CONTROL PANEL

NAME OF SITE
SITE TBC

ASSEMBLY REFERENCE
SFA7 DUAL PUMP (FORM 4) DOL STARTERS

DRAWING TITLE
CIRCUIT DIAGRAM OF COMMON CONTROLS

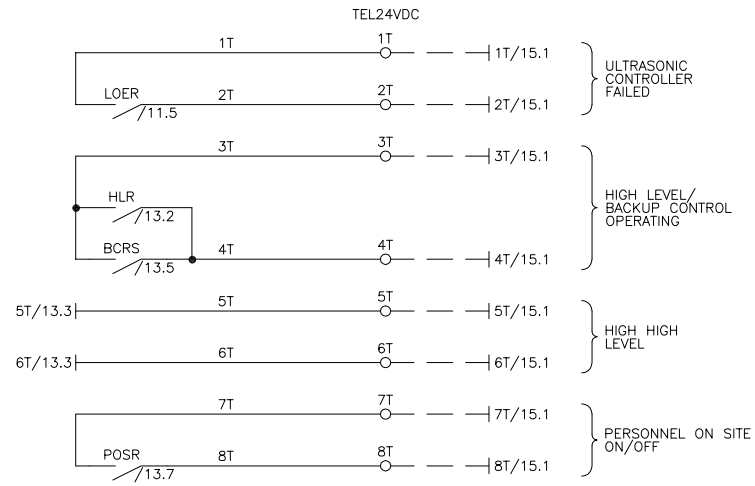
COMPARTMENT REFERENCE
C

REV
2P

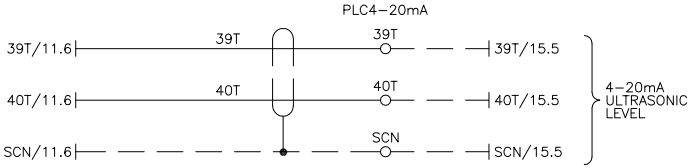
CEMA DRAWING No.
QT117789/SW

1	2	3	4	5	6	7	8

TELEMETRY SIGNALS
(1mmsq PINK)



CONTROL SIGNALS
(4–20mA 2 CORE SCREEN)



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SFA7 DUAL PUMP (FORM 4) DOL STARTERS

DRAWING TITLE
CIRCUIT DIAGRAM OF COMMON CONTROLS

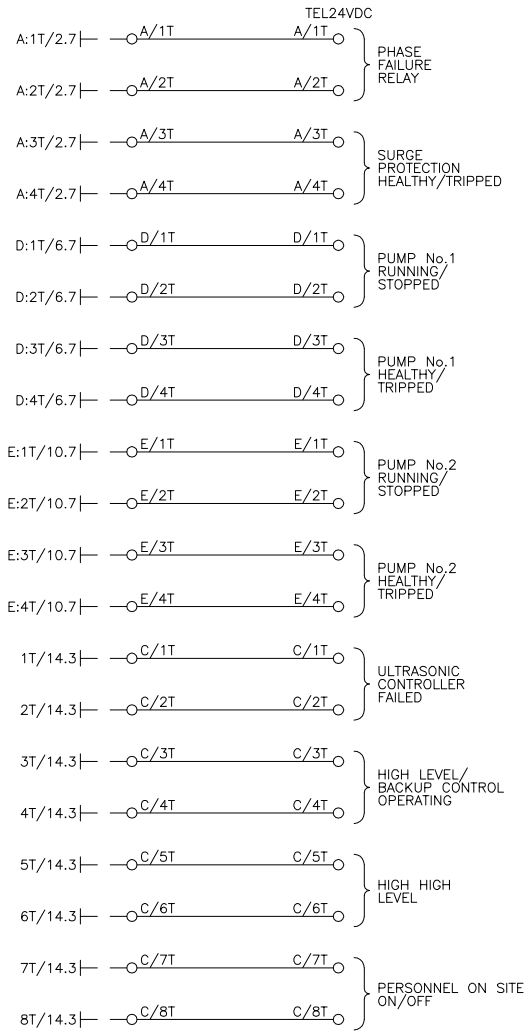
COMPARTMENT REFERENCE
C

REV
2P

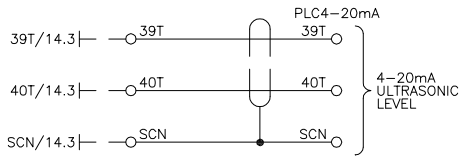
CEMA DRAWING No.
QT117789/SW

1	2	3	4	5	6	7	8

TELEMETRY SIGNALS
(1mmsq PINK)



CONTROL SIGNALS
(4–20mA 2 CORE SCREEN)



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CUSTOMER
PARADIGM SYSTEMS

PROJECT TITLE
SFA7 DUAL PUMP (FORM 4) CONTROL PANEL

NAME OF SITE
SITE TBC

ASSEMBLY REFERENCE
SFA7 DUAL PUMP (FORM 4) DOL STARTERS

DRAWING TITLE
CIRCUIT DIAGRAM OF TELEMETRY SIGNALLING

COMPARTMENT REFERENCE
B

REV
2P

CEMA DRAWING No.
QT117789/SW

Appendix F – Anglian Waters' Telemetry Process

Ten Steps to Telemetry

Step 1 - Initial Assessment

The developer submits an application (S104/S185/S30/S102) which includes a pumping station to be technically assessed. Once the application is assessed and technical approval is granted, the Drainage Engineer will then request that a Radio Survey (TF81) is undertaken. TF81 is sent to the Legal & Telemetry Coordinator to arrange. This takes approximately 12 weeks and is £300 (A one off survey takes 4-6 weeks and is £525)

Step 2 - Radio Survey

A radio survey is undertaken and results are received by the Legal & Telemetry Coordinator.

This then determines the type of hardware required (aerial/public switched telephone network (pstn)). The hardware proposal is prepared and sent to the developer along with the radio survey results. The hardware cost varies depending on type. A price is given on the hardware proposal.

Step 3 – Order Hardware

The developer completes the proposal and returns to the Legal & Telemetry Coordinator.

We order hardware on the developer's behalf and at a reduced price to them. The hardware is ordered from an external company and built to order which takes approximately 6 weeks. It is then delivered to the developer's preferred address (usually to site due to the weight).

Step 4 – Hardware Installation

The developer receives the hardware and has their contractor install it on site. Anglian Water do not install the telemetry hardware.

Step 5 – Commissioning

Once installed (including aerial/phone line), the developer should contact the Legal & Telemetry Coordinator to arrange a commissioning date. There is a fee of £605.04 for this service. This involves an Anglian Water Telemetry Engineer attending site as well as the developer's appointed contractor/electrician to ensure the site is correctly configured to allow data to be fed to our telemetry monitoring system (IRIS). If the commissioning meeting is successful, Anglian Water will be able to see the pump station 'live' on our monitoring system, IRIS. A commissioning appointment should take approximately 3-4 hours.

Step 6 – Monitoring Contract

Now that the site is commissioned it can benefit from an optional monitoring contract with Anglian Water. For £784.48 per annum (excl. VAT) Anglian Water will notify your appointed contact of any alarms that may be triggered 24 hours a day, 7 days a week. The responsibility of investigating the alarm and rectifying faults remains with the developer.

Step 7 – Final Inspection

Once the pumping station has served its maintenance period a final inspection will take place with a Drainage Technician, EAWR Engineer and a representative from Maintenance.

If the station is confirmed as suitable for adoption the Drainage Technician will issue an inspection sheet to the Drainage Support Technician to confirm this and advise the date that handover is due to take place. Documentation such as operating manuals, electricity bills, meter readings and the davit lifting certificate should also be provided at this point, if available.

Step 8 – Pre-adoption

At least 10 days prior to the handover the Drainage Support Technician will check that the land transfer of the pumping station compound has been completed. If so, they will complete and send the TF070 to the Legal & Telemetry Coordinator to check the telemetry for any faults. If faults are identified details will be sent to the Drainage Team to notify the developer as these must be rectified before adoption can take place.

Step 9 – Final Approval

The developer will need to advise the Drainage Technician once remedial works have taken place as we will need to re-do the telemetry survey to confirm. Once the survey comes back as successful we will then arrange a handover meeting.

Step 10 – Handover and Adoption

At the handover meeting the Drainage Technician will confirm with the Legal & Telemetry Coordinator, that the pumps are still working as expected, by phone, whilst on site, before we change the locks. The Drainage Team will then formally vest the site. At the same time our Telemetry Automation Team will update our monitoring system, IRIS to show this as an Anglian Water Adopted Asset.