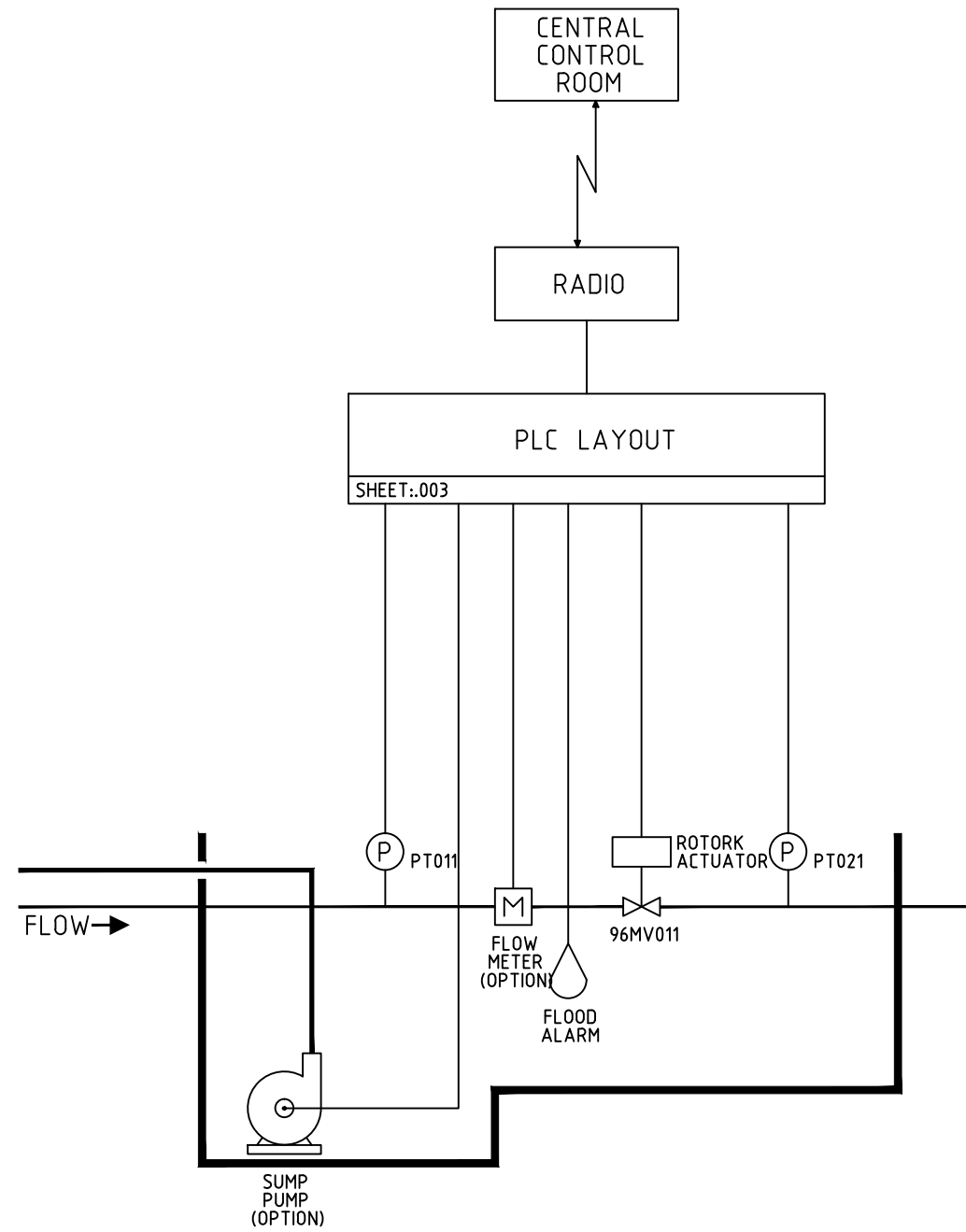


Drawing Index

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2007550.005.pdf	2007550.005A	STANDARD AUTOMATED LINE VALVE SITE LINE PRESSURE SENSOR SCHEMATIC
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2007550.008.pdf	2007550.008	STANDARD AUTOMATED LINE VALVE SITE PLC I/O SCHEMATIC
2007550.009.pdf	2007550.009A	STANDARD AUTOMATED LINE VALVE SITE TERMINAL LAYOUT AND FIELD WIRING
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2007550.014.pdf	2007550.014	STANDARD AUTOMATED LINE VALVE SITE POWER SUPPLY SCHEMATIC AND SINGLE LINE DIAGRAM
2007550.015.pdf	2007550.015	STANDARD AUTOMATED LINE VALVE SITE PLC LAYOUT
2007550.016.pdf	2007550.016	STANDARD AUTOMATED LINE VALVE SITE MODBUS COMMUNICATION

MICROFILM NO.	SHEET	STANDARD AUTOMATED LINE VALVE SITE	ACAD/REFERENCE FILE NO.
2007550	.001	OVERVIEW AND DRAWING LIST	2007550.001
2007550	.002	POWER SUPPLY SCHEMATIC AND SINGLE LINE DIAGRAM	2007550.002
2007550	.003	PLC LAYOUT	2007550.003
2007550	.004	MODBUS COMMUNICATION	2007550.004
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2007550	.013	FLOWMETER INSTRUMENTATION SCHEMATIC	2007550.013
2007550	.014	POWER SUPPLY SCHEMATIC AND SINGLE LINE DIAGRAM (2011 ONWARDS)	2007550.014
2007550	.015	PLC LAYOUT (2011 ONWARDS)	2007550.015
2007550	.016	MODBUS COMMUNICATION (2011 ONWARDS)	2007550.016

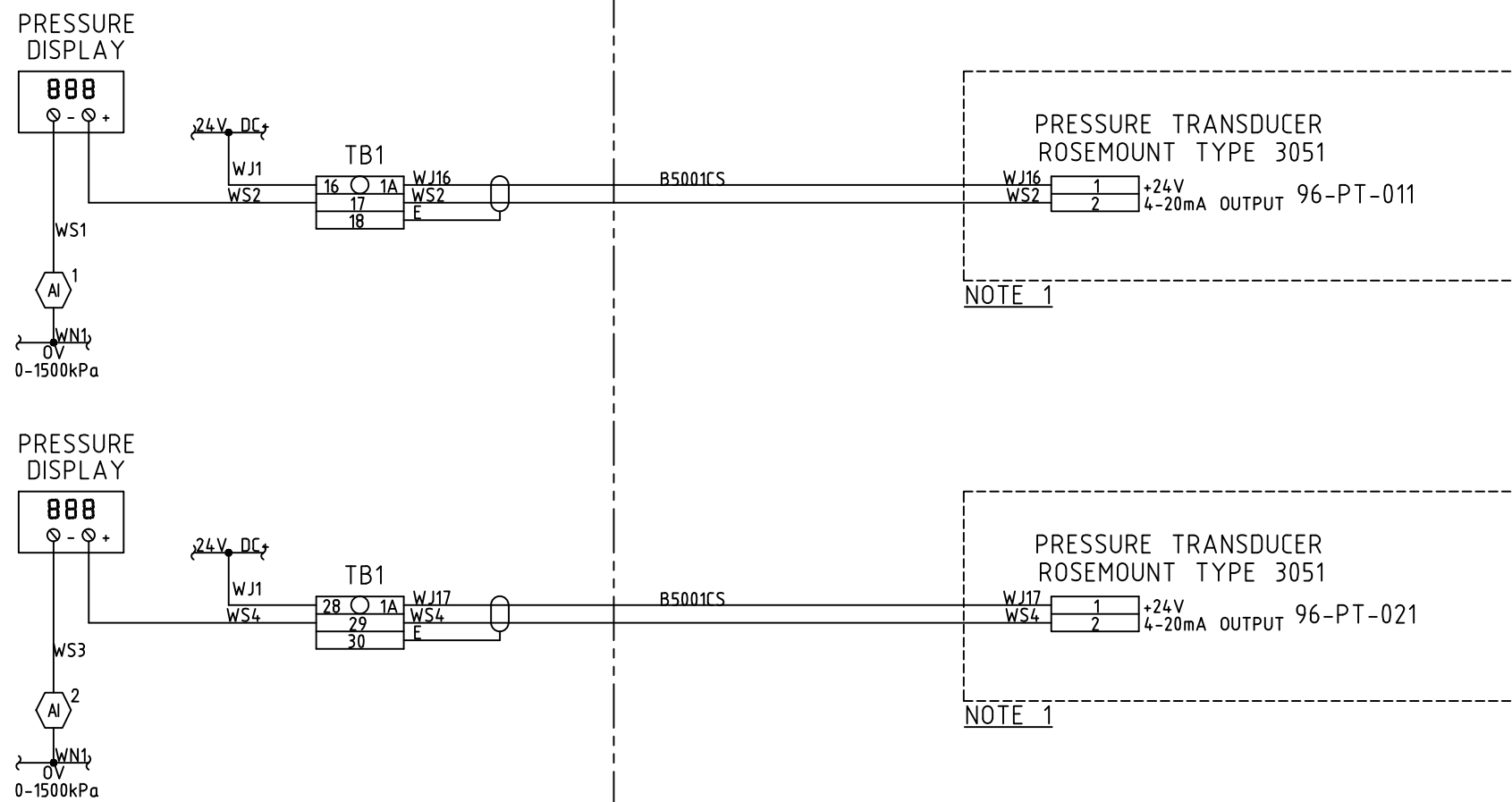


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DWG. CHECKED							DRAWING No.		
PROJECT LEADER							2007550 .001		
A.M. APPROVED		M.H	07:10	ISSUE					
A 02:11 AS BUILT KINGFISHER UPGRADE DRAWINGS .014--.016 ADDED		F.T		A					
- 08:10 AS BUILT		F.T							
ISSUE	DATE	AMENDMENT	BY	APPD.	BY	DATE			

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CONTROL CABINET
ELECTRICAL AREA

CONTROL CABINET
WET AREA



NOTE 1

NOTE 1

- NOTES:**
1. REFER DRAWING .009 FOR CABLING WIRING.
 2. PLC DIGITAL INPUT (LOCATION)
 - PLC DIGITAL OUTPUT (LOCATION)
 - PLC ANALOG INPUT (LOCATION)
 - PLC ANALOG OUTPUT (LOCATION)

ISSUE	DATE	AMENDMENT	BY	APPD.	DESIGNED	F.T	07:10	DES. CHECKED	M.H	07:10	DRAWN	J.B	07:10	DWG. CHECKED	PROJECT LEADER	A.M. APPROVED	M.H	07:10
A	02:11	AS BUILT KINGFISHER UPGRADE ADDED	F.T															
-	08:10	AS BUILT	F.T															

OPERATIONS

ASSET MANAGEMENT

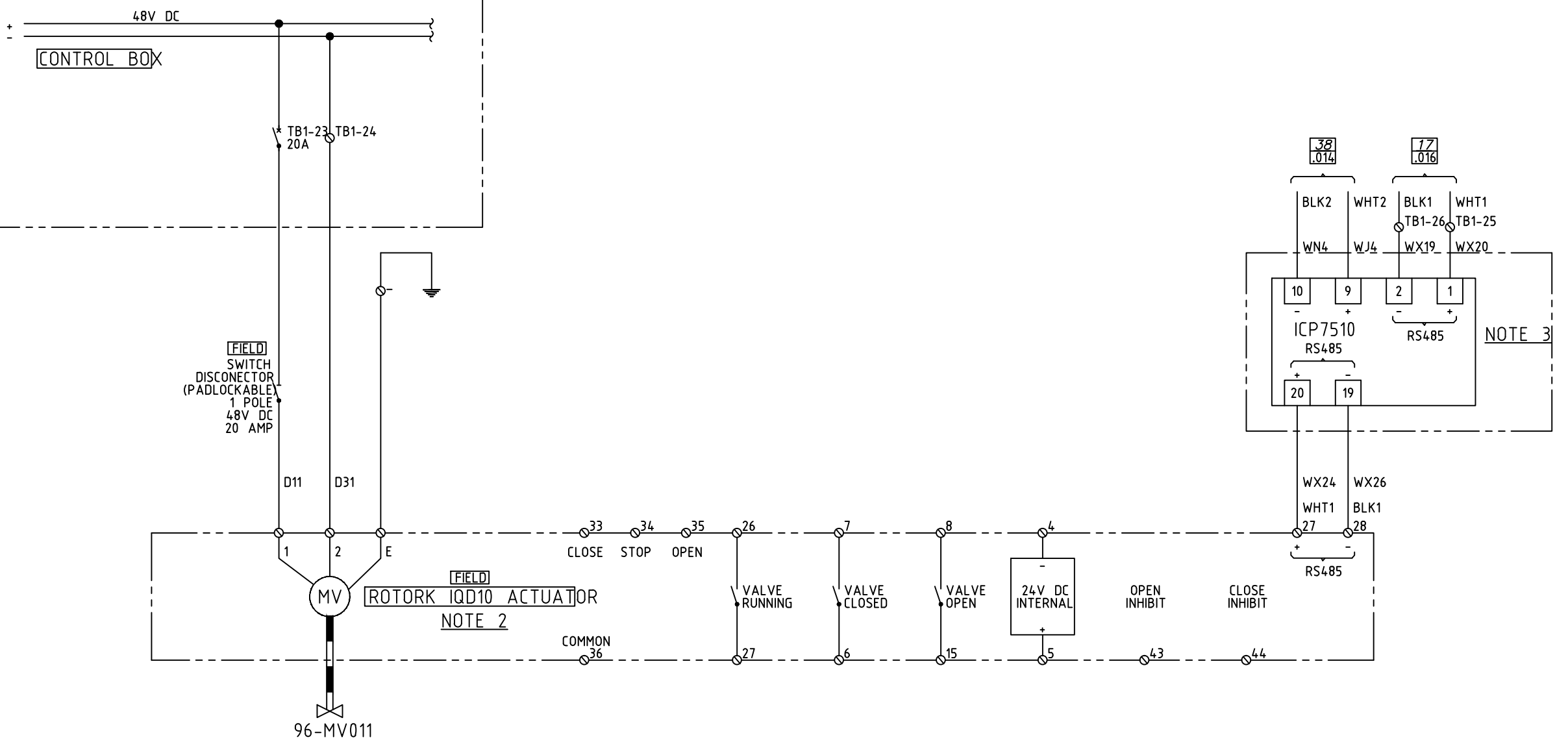
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STANDARD AUTOMATED LINE VALVE SITE CONTROL SYSTEM

LINE PRESSURE SENSOR SCHEMATIC

AS BUILT

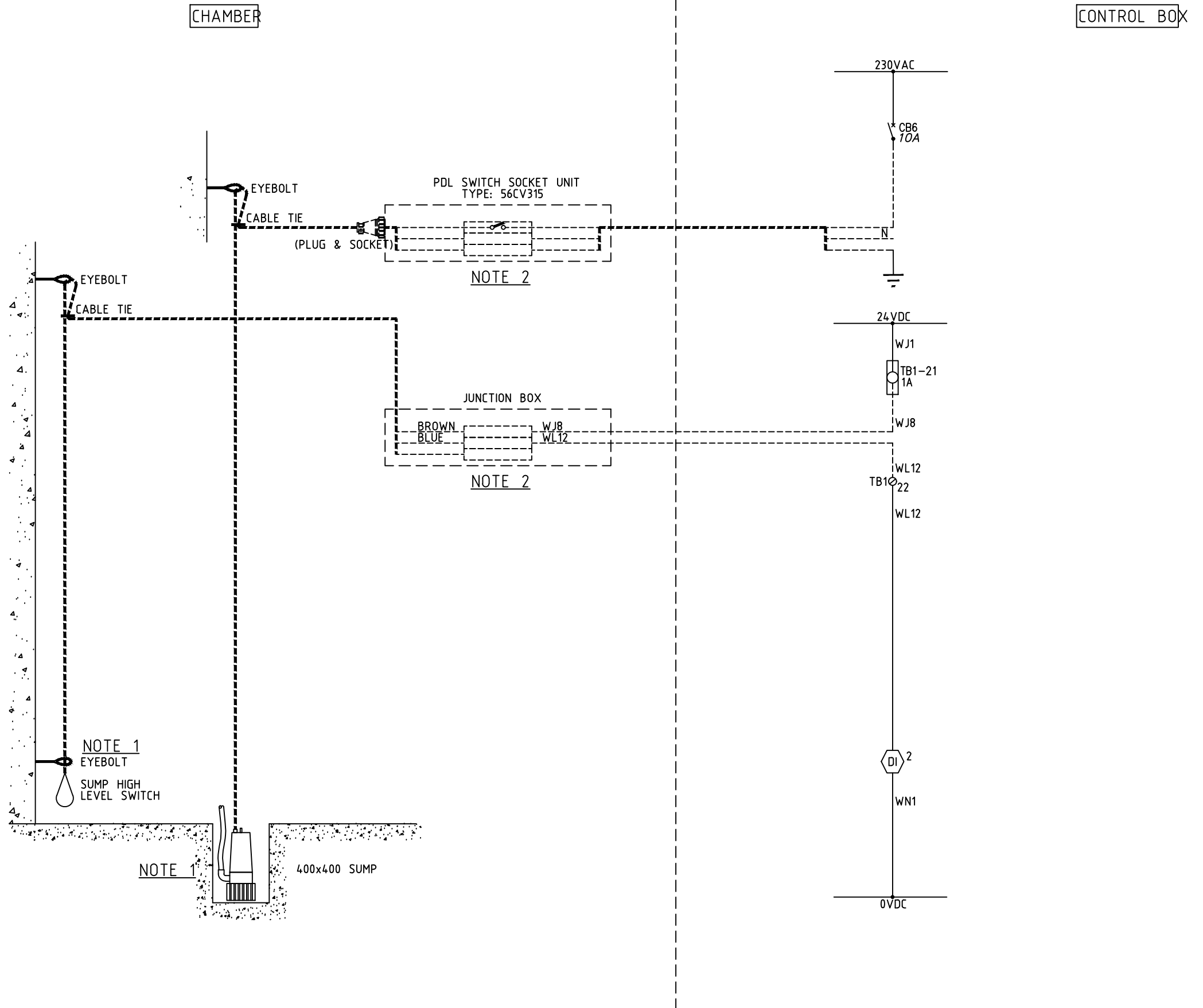
CAD FILE 2007550.005A	DATE 23-02-2011
ORIGINAL SCALE A3	CONTRACT No.
N.T.S	
DRAWING No.	ISSUE
2007550 .005	A



- NOTES:**
1. ALL EQUIPMENT IN CONTROL CABINET UNLESS OTHERWISE NOTED
 2. REFER DRAWING .009 FOR FIELD WIRING DIAGRAM.
 3. BOX ALONGSIDE ACTUATOR.
 4. REFER CONFIGURATION FILES IN QVCS.

ROTORK IQ ACTUATOR SPECIFICATION AND CONFIGURATION			
TYPE:	NOTE 4	CONTROL MODE CONFIGURATION	
SERIAL No:	NOTE 4	ESD DISABLE	OFF
OUTPUT SPEED (RPM):	NOTE 4	ESD DIRECTION	
OPENING/CLOSING TIME (M:s)	NOTE 4	ESD CONTACT MODE	
MAXIMUM OUTPUT TORQUE (Nm):	108	THERMOSTAT BYPASS	OF
POWER (kW):	NOTE 4	LOCAL MAINTAIN	ON
CURRENT (A):	NOTE 4	2 WIRE CONTROL	ON
WIRING DIAGRAM: 3002-400-04		2 WIRE CONTROL	ON
PASSWORD (DEFAULT ID)	ld	INTERLOCK ENABLE	OF
DIRECTION TO CLOSE	CLOCKWISE C	MODBUS MODULE	
CLOSE ACTION	LIMIT CL	FOLOMATIC CONTROL (OF)	OFF
OPEN ACTION	LIMIT OL	POSITION FEEDBACK SETTING (OI)	HI
TORQUE VALUE CLOSED (%)	40	DEMAND SIGNAL TYPE (FI)	U (VOLTAGE)
TORQUE VALUE OPEN (%)	65	MINIMUM POSITION (FL)	[(
INDICATION CONTACTS CONFIGURATION		MAXIMUM POSITION (FH)	= =
CONTACT R1	VALVE CLOSED CL (N/O)	DEADBAND (Fd)	5 (.5%)
CONTACT R2	VALVE OPEN OP (N/O)	MOTION INHIBIT TIMER (Ft)	05 (SECONDS)
CONTACT R3	VALVE RUNNING d? (N/O)	ACTION ON LOSS OF RS485 SIGNAL (FA)OF	-
CONTACT R4	BATTERY LOW bA (N/C)	POSITION ON LOSS OF SIGNAL (FF)	-
LUBRICATION: SAE80EP		DISPLAY PAKSCAN SCREENS (OP)	ON
		NODE ADDRESS (PA)	1
		BAUD RATE (PB)	9600
		PARITY	ODD
		STOP BITS	ONE

DESIGNED		F.T	07:10	OPERATIONS		STANDARD AUTOMATED LINE VALVE SITE CONTROL SYSTEM ROTORK ACTUATOR SCHEMATIC	AS BUILT	CAD FILE 2007550.006A		DATE 04-08-2011
DES. CHECKED		M.H	07:10					ORIGINAL SCALE A3	CONTRACT No.	
DRAWN		J.B	07:10					N.T.S		
DWG. CHECKED								DRAWING No.		
PROJECT LEADER				2007550 .006		ISSUE				
A.M. APPROVED		M.H	07:10	ASSET MANAGEMENT		A				
ISSUE	DATE	AMENDMENT	BY	APPD.	BY	DATE				



NOTES:

1. FLYGT FLOAT FOR HIGH LEVEL ALARM. TYPE: EMN10 6 METER MOUNTED 50mm ABOVE FLOOR. EXCESS CABLE TO BE CUT OFF, NOT COILED UP. LOWER EYEBOLT 300mm ABOVE FLOOR. EYEBOLTS TO PROTRUDE 50mm FROM THE WALL.
2. JUNCTION BOX AND SWITCHED SOCKET OUTLET TO BE MOUNTED 300mm DOWN FROM ROOF.
3. REFER DRAWING .009 FOR CABLING.

DESIGNED	F.T	07:10		
DES. CHECKED	M.H	07:10		
DRAWN	J.B	07:10		
DWG. CHECKED				
PROJECT LEADER				
A.M. APPROVED	M.H	07:10		
ISSUE	DATE	AMENDMENT	BY	APPD.
A	02:11	AS BUILT KINGFISHER UPGRADE ADDED	F.T	
-	08:10	AS BUILT	F.T	

OPERATIONS

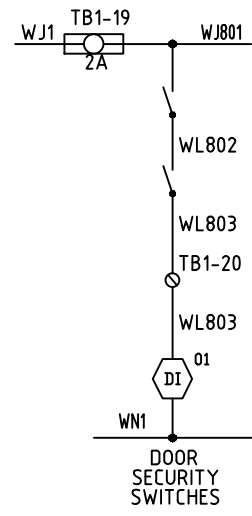
ASSET MANAGEMENT

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STANDARD AUTOMATED LINE VALVE SITE CONTROL SYSTEM
CHAMBER ALARM

AS BUILT

CAD FILE 2007550.007A	DATE 04:08:2011
ORIGINAL SCALE A3	CONTRACT No.
N.T.S	
DRAWING No.	ISSUE
2007550 .007	A



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DES. CHECKED	M.H	07:10
DRAWN	J.B	07:10
DWG. CHECKED		
PROJECT LEADER		
A.M. APPROVED	M.H	07:10
BY	APPD.	DATE

OPERATIONS
ASSET MANAGEMENT

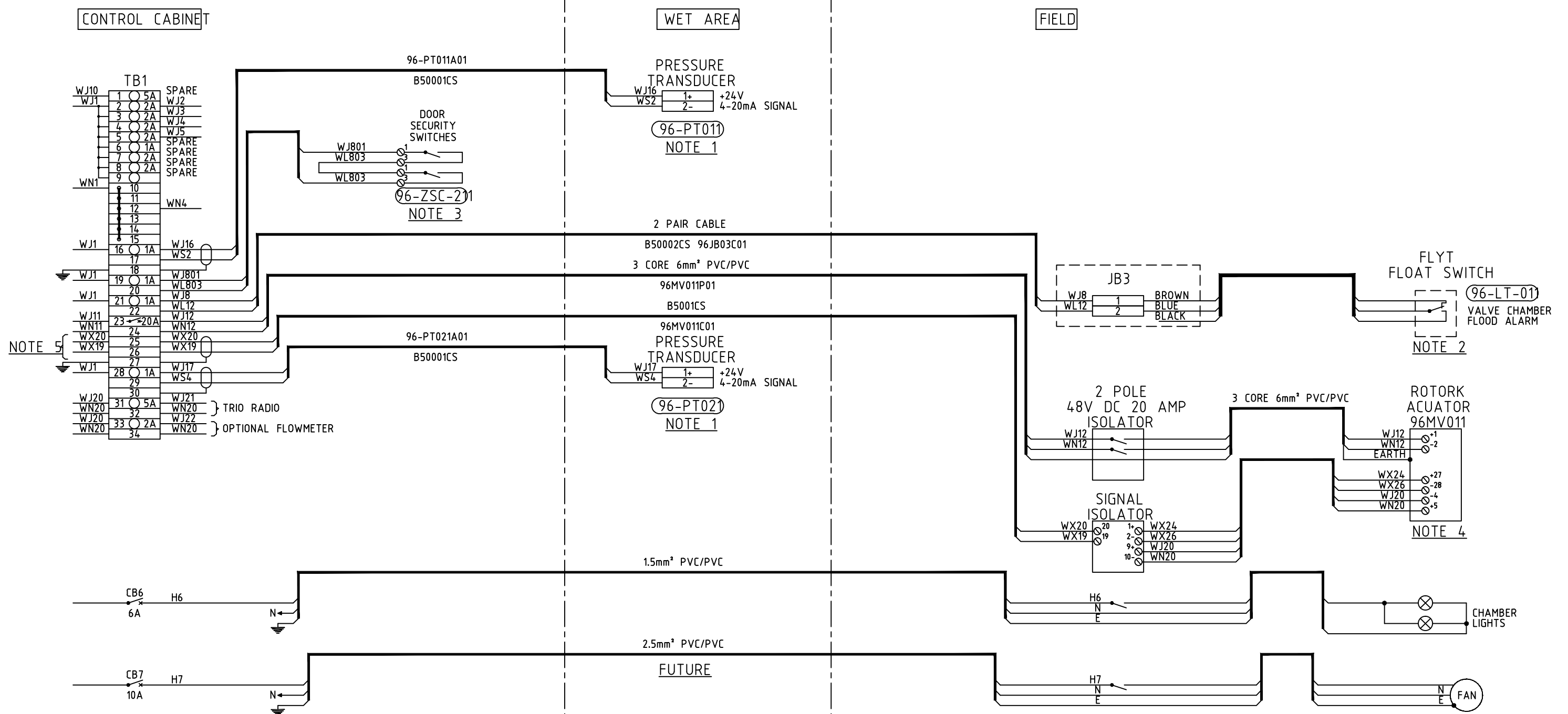
waterCare
services limited

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STANDARD AUTOMATED LINE VALVE SITE
CONTROL SYSTEM
PLC I/O SCHEMATIC

AS BUILT

CAD FILE 2007550.008	DATE 02-08-2010
ORIGINAL SCALE A3	CONTRACT No.
N.T.S	
DRAWING No. 2007550 .008	ISSUE —



NOTE 5

NOTE 1

NOTE 3

NOTE 1

NOTE 2

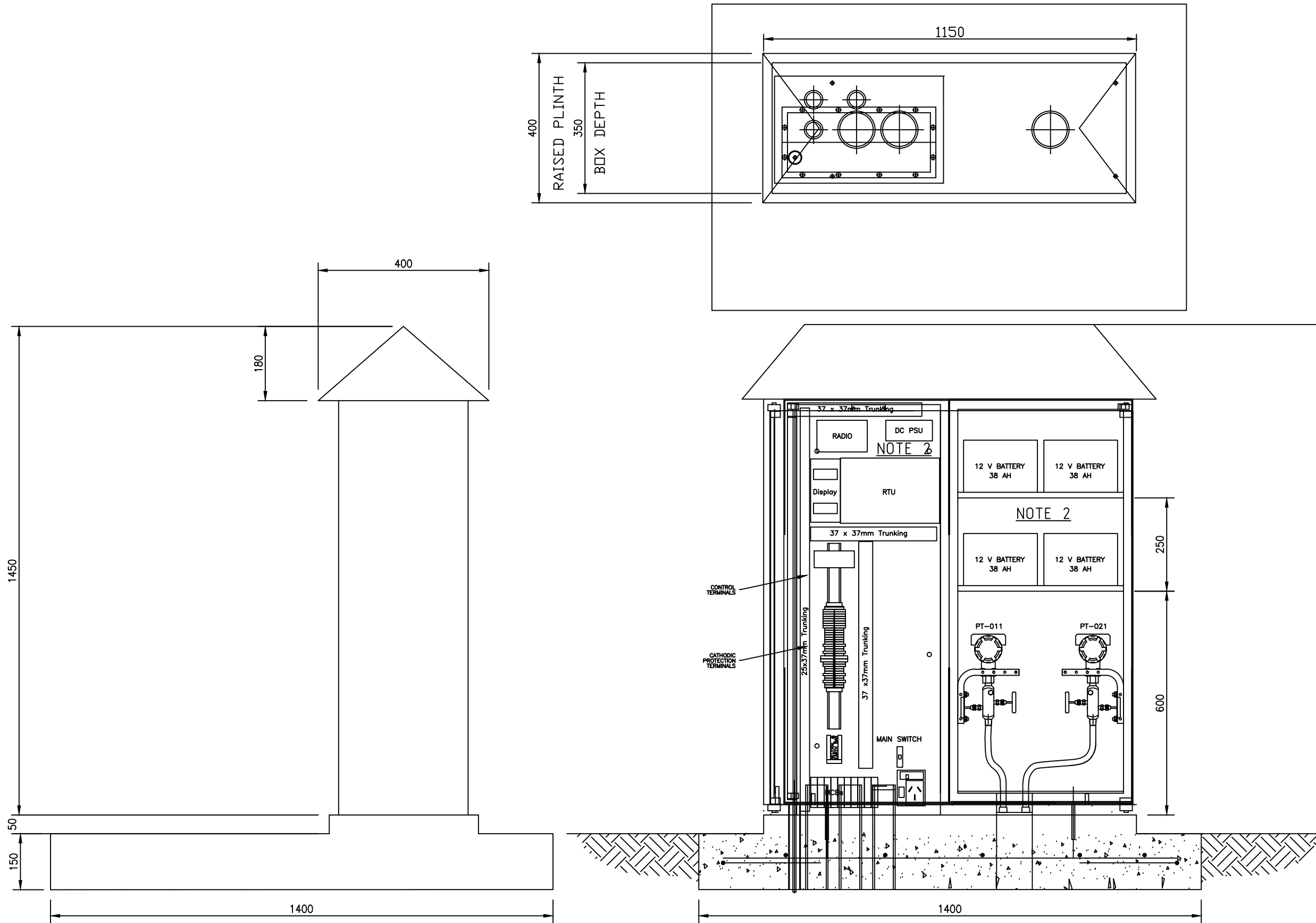
NOTE 4

- NOTES:**
1. REFER DRAWING. .005.
 2. REFER DRAWING. .007.
 3. REFER DRAWING. .008. REED SWITCH OPENS WHEN DOOR OPENS.
 4. REFER DRAWING. .006.
 5. REFER DRAWING. .004/.016.

		DESIGNED		F.T	07:10		OPERATIONS ASSET MANAGEMENT	CAD FILE 2007550.009A		DATE 04:08:2011
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		DWG. CHECKED						DRAWING No.		ISSUE
		PROJECT LEADER						2007550 .009		A
		A.M. APPROVED		M.H	07:10					
ISSUE	DATE	AMENDMENT	BY	APPD.		BY	DATE			
A	02:11	AS BUILT KINGFISHER UPGRADE ADDED		F.T				AS BUILT		
-	08:10	AS BUILT		F.T						

STANDARD AUTOMATED LINE VALVE SITE CONTROL SYSTEM
 TERMINAL LAYOUT AND FIELD WIRING

AS BUILT



NOTES:
 1. REFER DRAWING 2007550.011 FOR BASE DETAILS.
 2. BATTERY QUANTITY AND PSU TO SUIT ROTORK VOLTAGE.

ISSUE	DATE	AMENDMENT	BY	APPD.	DESIGNED	BY	DATE
A	02:11	AS BUILT KINGFISHER UPGRADE ADDED	F.T		F.T		07:10
-	08:10	AS BUILT	F.T		DES. CHECKED	M.H	07:10
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					A.M. APPROVED	M.H	07:10

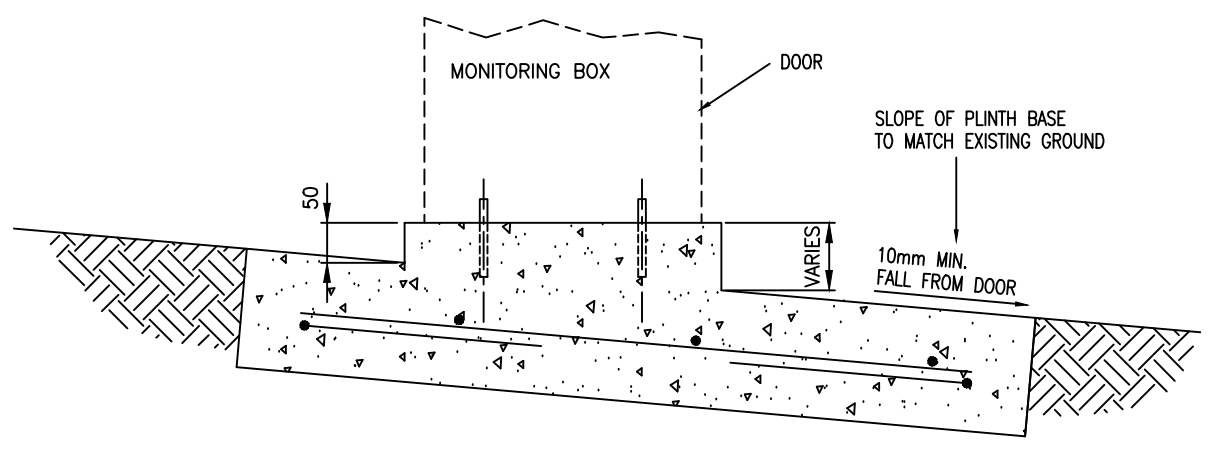
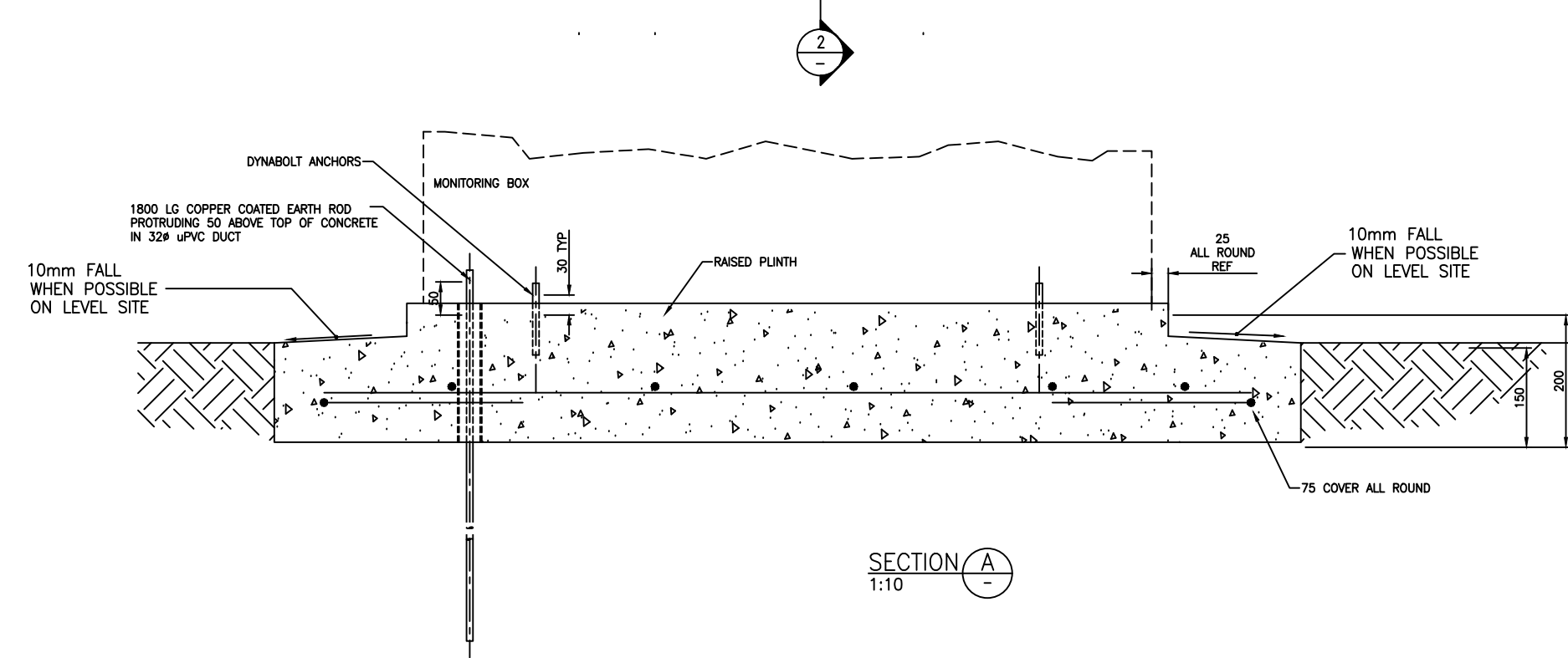
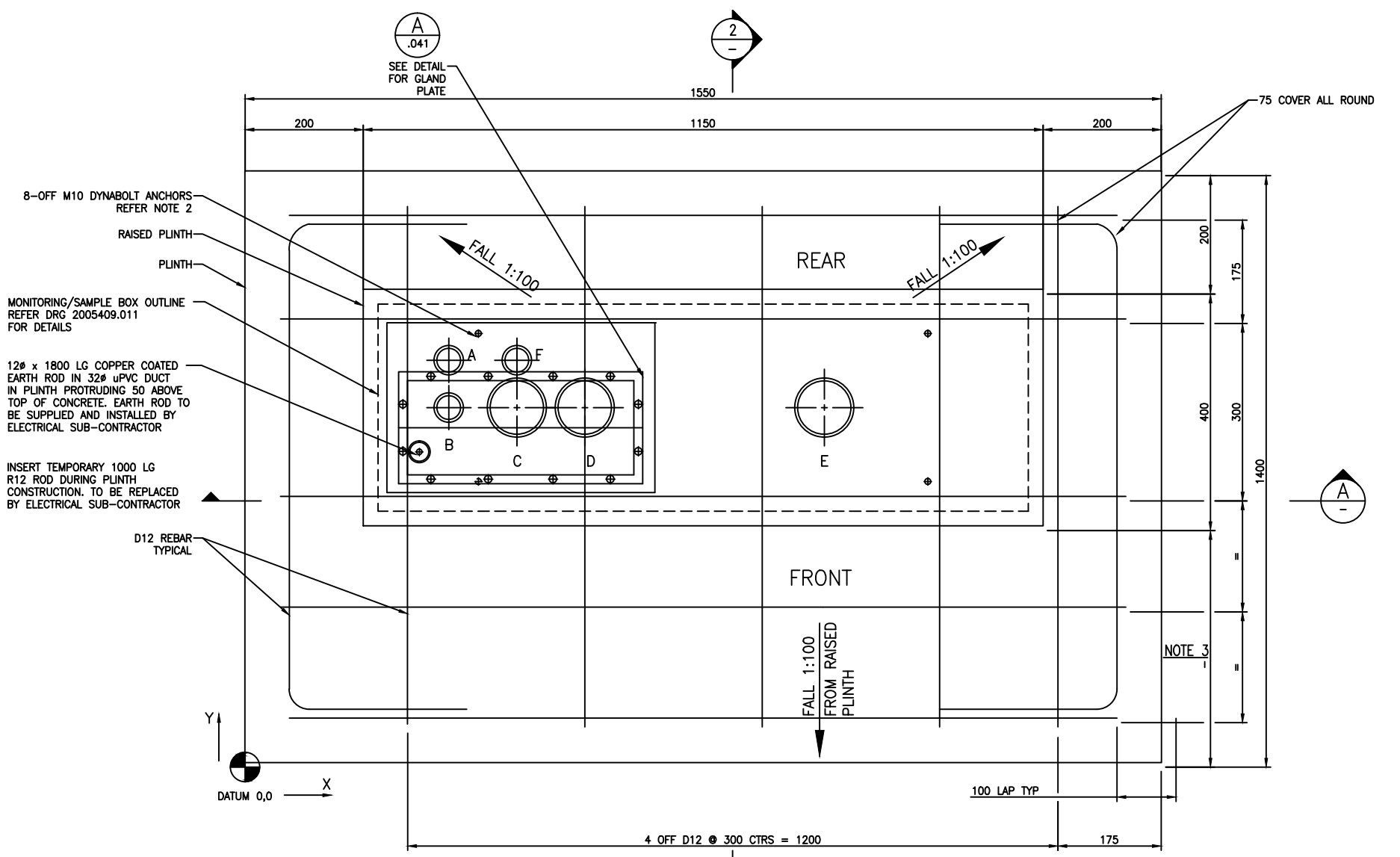
OPERATIONS	
ASSET MANAGEMENT	

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STANDARD AUTOMATED LINE VALVE SITE CONTROL SYSTEM
 BOX SIZE DETAILS AND LAYOUT

AS BUILT

CAD FILE 2007550.010A	DATE 08:06:2011
ORIGINAL SCALE A3	CONTRACT No.
N.T.S	
DRAWING No.	ISSUE
2007550 .010	A



- NOTES:**
- CHECK ALL DIMENSIONS & PENETRATIONS LOCATIONS ON SITE.
 - CONTROL BOX ANCHOR BOLTS TO BE M10, 98mm GALVANISED DYNABOLTS P/No DP12100GH. TO PLACE, DRILL Ø12 HOLE 60 DEEP. USE BOX AS TEMPLATE.
 - MINIMUM PAD PROJECTION 800mm, UNLESS INSTRUCTED OTHERWISE
 - DUCTWORK MATERIAL TO COMPLY WITH AS/NZS 2053. WHERE A CHANGE IN DUCT DIRECTION IS REQUIRED USE LONG RADIUS BENDS.
 - ELECTRICAL DUCTWORK IS TO MAINTAIN A MINIMUM COVER OF 500mm.
 - TWO POLYPROPYLENE DRAW WIRES TO BE PROVIDED IN EACH DUCT.

PENETRATION CHART				
PENETRATION	DESCRIPTION	SIZE/MATERIAL	X-COORD	Y-COORD
A	POWER SUPPLY TO BSP	50NB uPVC	345	1080
B	POWER SUPPLY INCOMING	50NB uPVC	345	1000
C	FLOW METER/ROTORK	100NB uPVC	460	1000
D	SUMP PUMP LIGHTS FAN	100NB uPVC	575	1000
E	PRESSURE SAMPLE LINES	100NB uPVC	980	1000
F	COMMS TO BSP BOX	50NB uPVC	460	1080

ISSUE	DATE	AMENDMENT	BY	APPD.	BY	DATE
A	02:11	AS BUILT KINGFISHER UPGRADE ADDED	F.T			
-	08:10	AS BUILT	F.T			

DESIGNED	F.T	07:10
DES. CHECKED	M.H	07:10
DRAWN	J.B	07:10
DWG. CHECKED		
PROJECT LEADER		
A.M. APPROVED	M.H	07:10



STANDARD AUTOMATED LINE VALVE SITE
CONTROL SYSTEM
CONCRETE PLINTH DETAIL

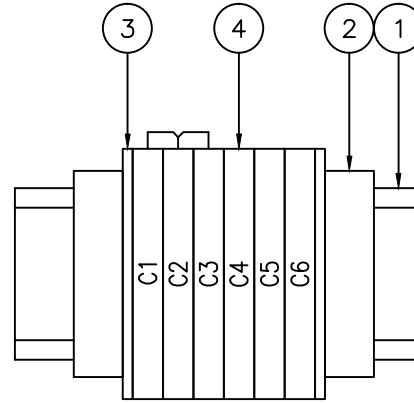
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CAD FILE	2007550.011A	DATE	23:02:2011
ORIGINAL SCALE	A3	CONTRACT No.	
N.T.S			
DRAWING No.	2007550 .011	ISSUE	A

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TERMINAL BLOCK DETAILS

ITEM No.	DESCRIPTION	MAKE	MODEL No:
1	TERMINAL RAIL	PHOENIX	NS 35/7.5
2	END STOP	PHOENIX	E/UK1
3	END COVER	PHOENIX	D-UK4/16
4	TERMINAL BLOCK	WEIDMULLER	SAKI6



TB2
DETAIL 2

DETAIL 3

TERMINAL BLOCK SCHEDULE

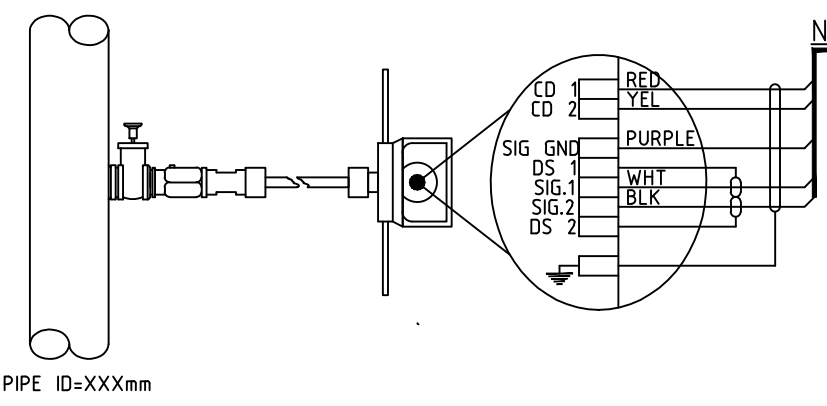
CABLE TO	WIRE SIZE (mm2)	TERMINAL	COLOUR	LABEL	DRAWING No.
LOOP TO TERM 2	4	1	RED	N/A	NA
LOOP TO TERM 1	4	2	RED	N/A	NA
LOOP TO TERM 3	4	1	BLACK	N/A	NA
LOOP TO TERM 2	4	1	BLACK	N/A	NA
LV CHAMBER	16	1	BLACK	NOTE 1	NA
NOTE 1	16	2	BLACK	NOTE 1	NOTE 1
LV CHAMBER	16	3	WHITE	NOTE 1	NA
LV CHAMBER	4	4	BLACK	NOTE 1	NA
LV CHAMBER	4	5	WHITE	NOTE 1	NA

NOTE:

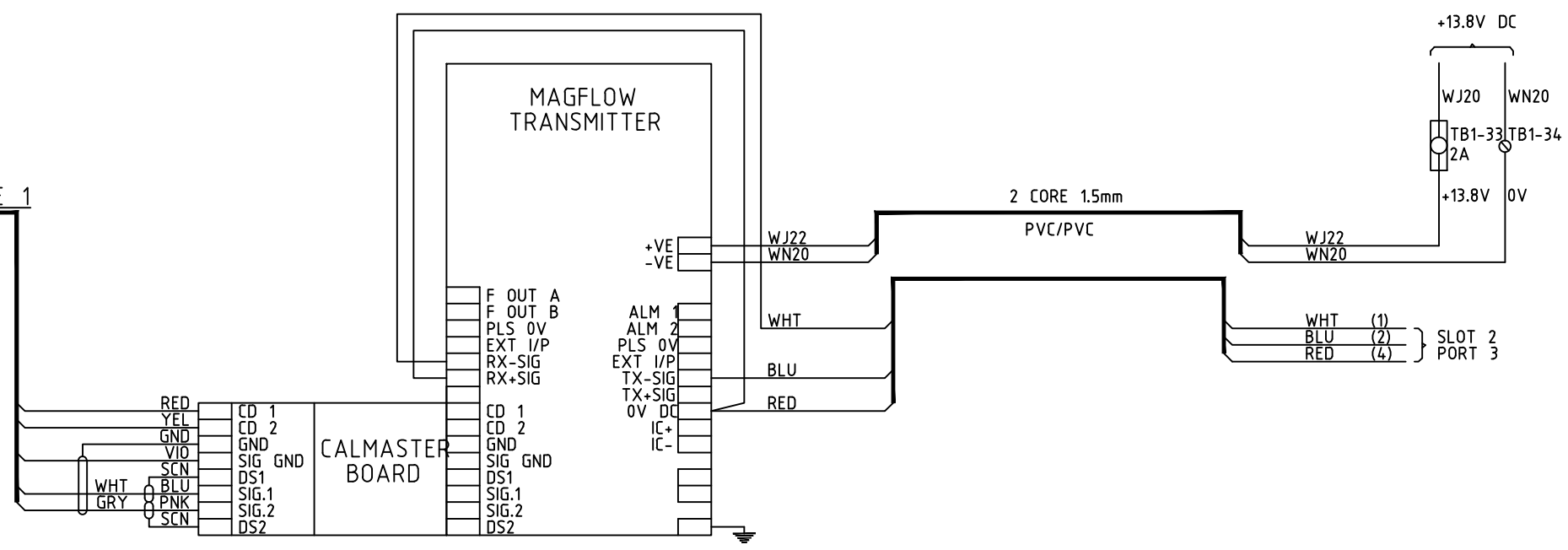
1. SITE SPECIFIC.

		DESIGNED		F.T	07:10	 <p>COPYRIGHT - This drawing, the design concept, remain the exclusive property of Watercare Services Limited and may not be used without approval. Copyright reserved.</p>	STANDARD AUTOMATED LINE VALVE SITE CONTROL SYSTEM CATHODIC PROTECTION SITE CP320	AS BUILT	CAD FILE 2007550.012		DATE 02:08:2010
		DES. CHECKED		M.H	07:10				ORIGINAL SCALE A3	CONTRACT No.	
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		DWG. CHECKED							DRAWING No.		
		PROJECT LEADER							2007550 .012		
		A.M. APPROVED		M.H	07:10	ISSUE					
ISSUE	DATE	AMENDMENT	BY	APPD.		BY	DATE			ASSET MANAGEMENT	

CONTROL CUBICLE



NOTE 1



- NOTES:
1. CABLE SUPPLIED BY MANUFACTURER - CUT TO REQUIRED LENGTH.
 2. FOR SERIAL COMMS LINK REFER DRAWING .004 ICP7188D/D05 PROTOCOL CONVERTOR.

ISSUE	DATE	AMENDMENT	BY	APPD.
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-	08:10	AS BUILT	F.T	

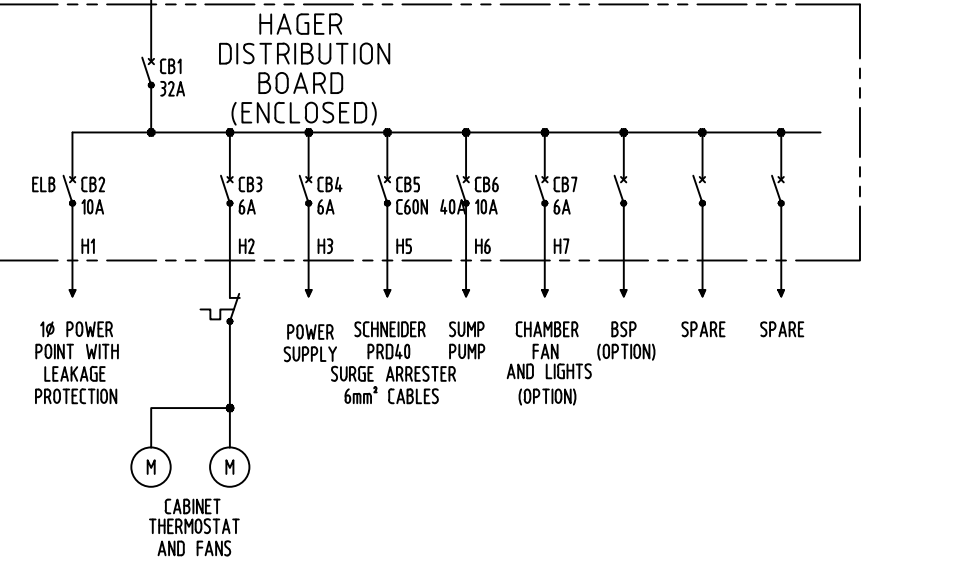
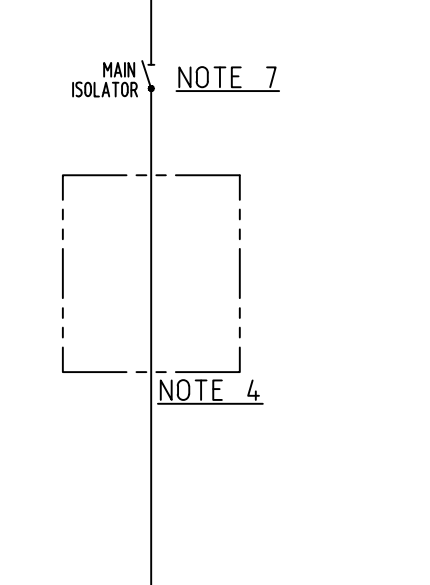
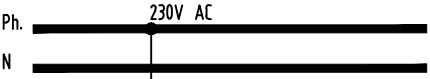
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A.M. APPROVED	M.H	07:10



STANDARD AUTOMATED LINE VALVE SITE CONTROL SYSTEM
FLOWMETER INSTRUMENTATION SCHEMATIC

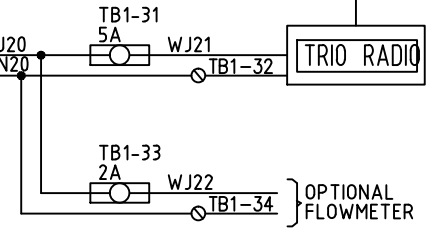
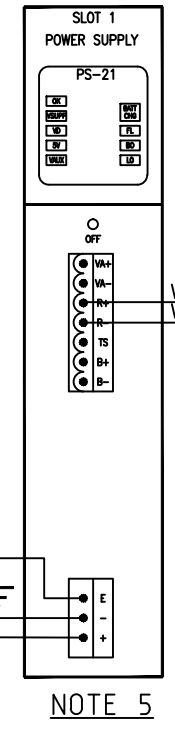
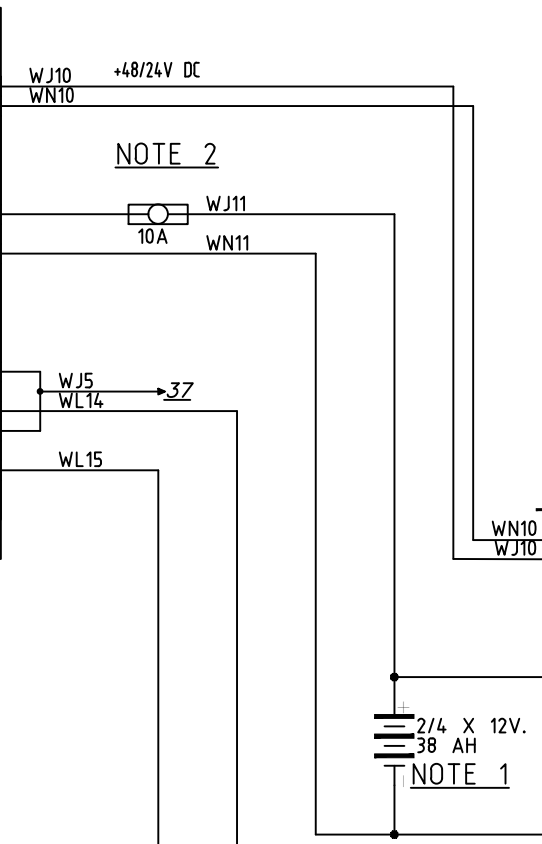
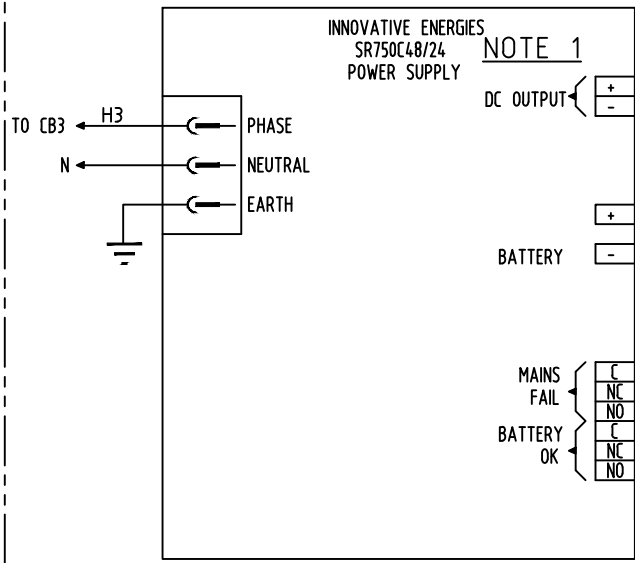
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CAD FILE 2007550.013A	DATE 04:08:2011
ORIGINAL SCALE A3	CONTRACT No.
N.T.S	
DRAWING No. 2007550 .013	ISSUE A



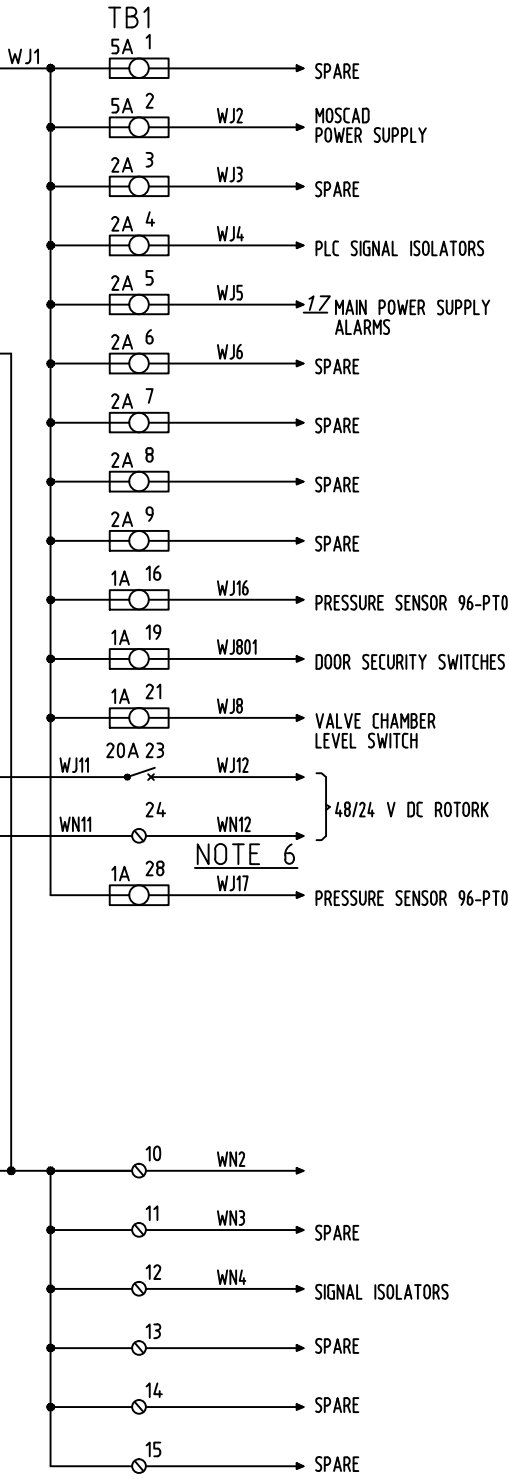
SINGLE LINE DIAGRAM

- NOTES:**
- POWER SUPPLY MODEL AND 2 OR 4 BATTERIES DEPENDING ON ROTORK VOLTAGE (24 OR 48VDC).
 - FUSE TO BE LOCATED AS CLOSE AS PRACTICAL TO BATTERY TERMINALS. MINIMUM WIRE SIZE 2.5mm².
 - DI PLC DIGITAL INPUT (LOCATION)
 - DO PLC DIGITAL OUTPUT (LOCATION)
 - AI PLC ANALOG INPUT (LOCATION)
 - AO PLC ANALOG OUTPUT (LOCATION)
 - 1 Ph. METER NOT FITTED. SPACE LEFT FOR FUTURE.
 - KINGFISHER RTU AND TRIO RADIO SUPERSEDES THE MOTOROLA MOSCAD AND MDS RADIO FROM 2011.
 - TERMINALS 23 & 24 TO BE 6mm².
 - MUST BE LOCKABLE IN THE "OFF" STATE.



SLOT 3 MIXED I/O 8 CHANNELS
KINGFISHER IO-4

WIRE NO.	CHG. NO.	TAG DESCRIPTION	TERMINALS
			N/C 1
			N/C 2
WS1	.005	PRESSURE POINT	A-1 3
			N/C 4
WS3	.005	PRESSURE POINT	A-2 5
WN1	.005	PRESSURE POINT & PFD21	OV/COM 8
			24V DC OUT 7
ML02	.009	DOOR SECURITY	DI-1 9
ML12	.007	VALVE CHAMBER FLOOD	DI-2 9
ML15	.002	HISTORY LOW	DI-3 10
ML14	.002	DOOR SW	DI-4 11
			DI-5 12
			DI-6 13
			DI-7 14
			DI-8 15
WN1	.002	OV	DI COMMON 16
			DO-1 17
			DO-2 18
			DI COMMON 19
			DI-19 20



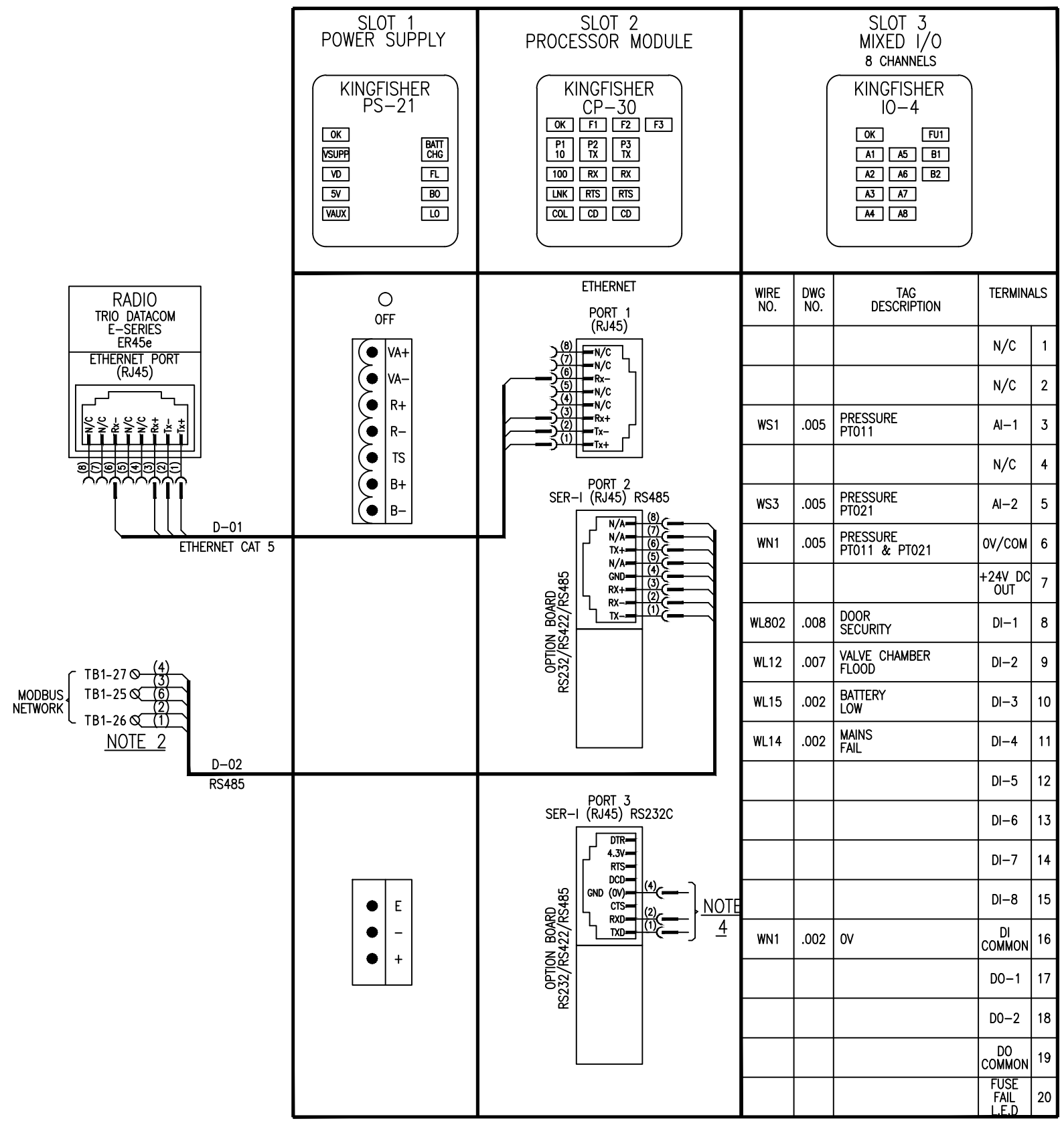
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DES. CHECKED	M.H	07:10
DRAWN	J.B	07:10
DWG. CHECKED		
PROJECT LEADER		
A.M. APPROVED	M.H	07:10

OPERATIONS	
ASSET MANAGEMENT	



STANDARD AUTOMATED LINE VALVE SITE CONTROL SYSTEM
POWER SUPPLY SCHEMATIC AND SINGLE LINE DIAGRAM (2011 ONWARDS)

CAD FILE	2007550.014	DATE	04:08:2011
ORIGINAL SCALE	A3	CONTRACT No.	
N.T.S			
DRAWING No.		ISSUE	
2007550 .014		-	

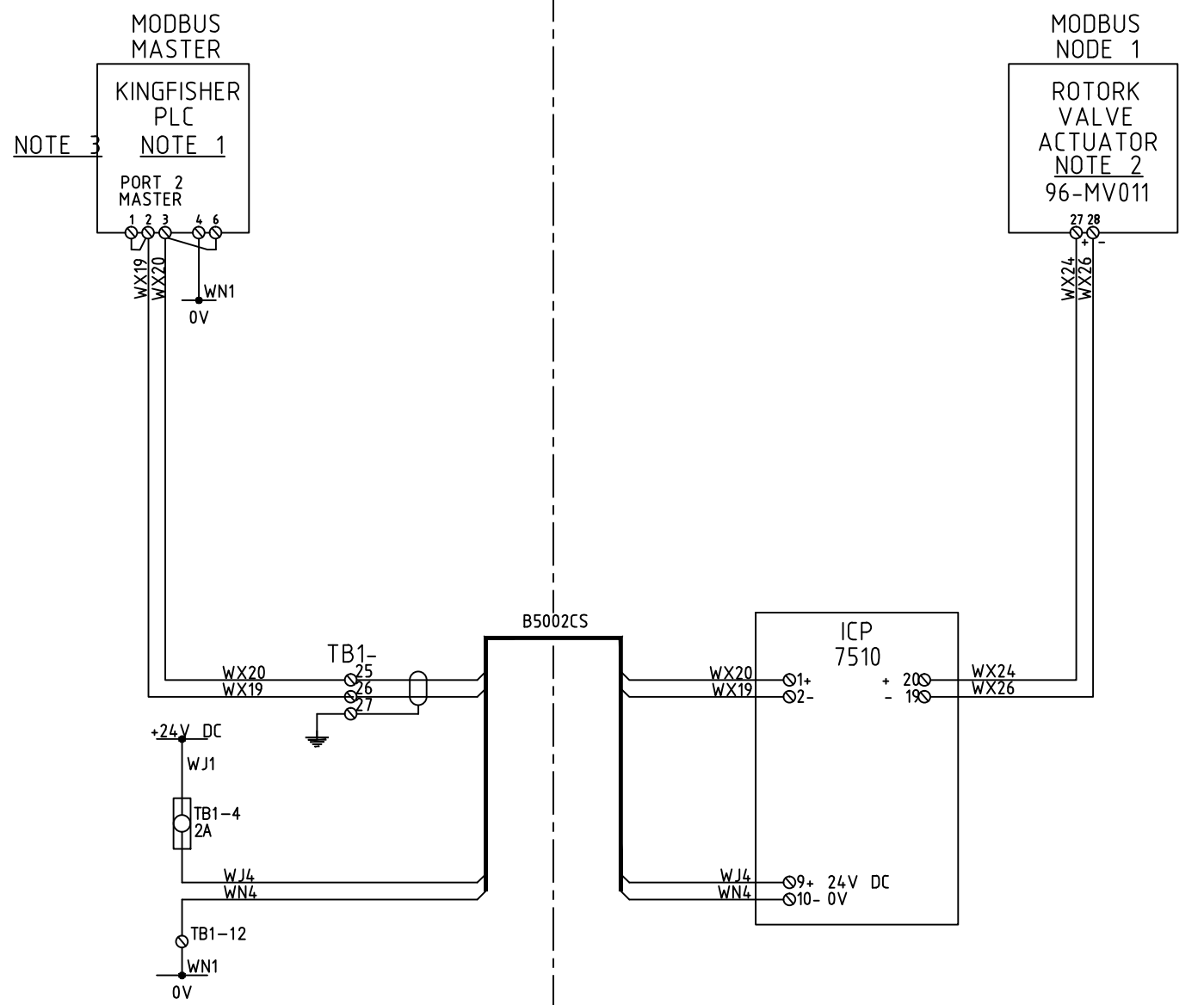


WIRE NO.	DWG NO.	TAG DESCRIPTION	TERMINALS
			N/C 1
			N/C 2
WS1	.005	PRESSURE PT011	AI-1 3
			N/C 4
WS3	.005	PRESSURE PT021	AI-2 5
WN1	.005	PRESSURE PT011 & PT021	0V/COM 6
			+24V DC OUT 7
WL802	.008	DOOR SECURITY	DI-1 8
WL12	.007	VALVE CHAMBER FLOOD	DI-2 9
WL15	.002	BATTERY LOW	DI-3 10
WL14	.002	MAINS FAIL	DI-4 11
			DI-5 12
			DI-6 13
			DI-7 14
			DI-8 15
WN1	.002	0V	DI COMMON 16
			DO-1 17
			DO-2 18
			DO COMMON 19
			FUSE FAIL L.E.D 20

- NOTES:
- FOR POWER SUPPLY REFER DRAWING .014.
 - MODBUS COMMUNICATION REFER DRAWING .016.
 - KINGFISHER RTU SUPERSEDES THE MOTOROLA MOSCAD FROM 2011.
 - TO OPTIONAL FLOWMETER.

CONTROL BOX

FIELD



NOTES:
 1. REFER DRAWING .003
 2. REFER DRAWING .006
 3. KINGFISHER PLC SUPERSEDES MOSCAD PLC FROM 2011.

		DESIGNED		F.T	07:10	<p>STANDARD AUTOMATED LINE VALVE SITE CONTROL SYSTEM MODBUS COMMUNICATION (2011 ONWARDS)</p>	AS BUILT	CAD FILE 2007550.016		DATE 12-08-2011
		DES. CHECKED		M.H	07:10			ORIGINAL SCALE A3	CONTRACT No.	
		DRAWN		J.B	07:10			N.T.S		
		DWG. CHECKED						DRAWING No.		ISSUE
		PROJECT LEADER						2007550 .016		—
— 02:11		AS BUILT KINGFISHER UPGRADE DRAWINGS .014 — .016 ADDED		F.T		COPYRIGHT - This drawing, the design concept, remain the exclusive property of Watercare Services Limited and may not be used without approval. Copyright reserved.				
ISSUE	DATE	AMENDMENT	BY	APPD.		ASSET MANAGEMENT				