



SITE COVER SHEET


ELECTRICAL DRAWINGS INDEX							
DWG N°.	TITLE	SHEET	REVISIONS				
WB???-1000-EE-DRG-0001	ELECTRICAL DRAWING INDEX	01					
WB???-1000-EE-DRG-0002	SINGLE LINE DIAGRAM - 400VAC & 230VAC	02					
WB???-1000-EE-DRG-0003	POWER DISTRIBUTION SCHEMATIC DIAGRAM - 400VAC & 230VAC	03					
WB???-1000-EE-DRG-0004	SCHEMATIC DIAGRAM - WATER BOOSTER PUMPS 1 & 2	04					
WB???-1000-EE-DRG-0005	<i>RESERVED (WATER BOOSTER PUMPS 3 & 4)</i>	05					
WB???-1000-EE-DRG-0006	<i>RESERVED (WATER BOOSTER PUMP 5)</i>	06					
WB???-1000-EE-DRG-0007	SCHEMATIC DIAGRAM - MTS CONTROL	07					
WB???-1000-EE-DRG-0008	<i>RESERVED (GENERATOR CONTROL)</i>	08					
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WB???-1000-EE-DRG-0011	SCHEMATIC DIAGRAM - COMMON RTU I/O	11					
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WB???-1000-EE-DRG-0028	GENERAL ARRANGEMENT - CONDUIT DETAILS	28					

STANDARD VARIABLES		
DESCRIPTION	VALUES	
SWITCHBOARD RATINGS	SWITCHBOARD: MAX DEMAND tb.aA FAULT LEVEL tb.akA	
INCOMING MAINS SUPPLY CABLE	16mm ²	
MAIN EARTHING CABLE	6mm ²	
NORMAL SUPPLY MAIN SWITCH	125A, S250NE 3 125	
GENERATOR SUPPLY MAIN SWITCH	125A, S250NE 4 125	
GRUNDFOS PUMP MODEL No.	<<??>>	
BOOSTER PUMP KW RATING:	BP1=<?>kW	BP2=<?>kW
BOOSTER PUMP CIRCUIT BREAKER TYPE:	S125NJ 3 20	S125NJ 3 20
BOOSTER PUMP CIRCUIT BREAKER RATING:	<?>A	<?>A
BOOSTER PUMP MOTOR SUPPLY CABLE:	<?>mm ²	<?>mm ²
HARMONIC FILTER MAIN ISOLATOR	32A, S125NJ 3 32	
DELIVERY FLOWMETER	PROMAG W400 5W4C1F <<??>>l/s	
SUCTION PRESSURE	1090-PIT-0001	<<??>>kPa
DELIVERY PRESSURE No1	1090-PIT-0002	<<??>>kPa
DELIVERY PRESSURE No2	1090-PIT-0003	<<??>>kPa
RADIO		
BACKUP COMMS		
BOOSTER PUMPS - SAFETY STOP CATEGORY	CATEGORY 1	

STANDARD DESIGN OPTIONS		
OPTION	DESCRIPTION	FITTED
A	MANUAL TRANSFER SWITCH	YES <input checked="" type="checkbox"/>
B	DIRECT CONNECTED METERING	YES <input checked="" type="checkbox"/>
C	XXXXXX RTU	YES <input checked="" type="checkbox"/>
D1	PUMP 3 NOT INSTALLED	YES NO
D2	PUMP 4 NOT INSTALLED	YES NO
D3	PUMP 5 NOT INSTALLED	YES NO
E1	DELIVERY FLOWMETER INSTALLED	YES <input checked="" type="checkbox"/>
E2		YES NO
F	XXXXXX RADIO	YES <input checked="" type="checkbox"/>
G	4G MODEM	YES <input checked="" type="checkbox"/>
H		YES NO
I		YES NO
J		YES NO
K1		YES NO
K2	FLOWMETER PIT SUMP PUMP NOT INSTALLED	YES NO
L1		YES NO
L2	FLOWMETER PIT LEVEL RELAY NOT INSTALLED	YES NO
M	PUMP BOX VENTILATION FAN NOT INSTALLED	YES NO
N	AREA LIGHTING	YES <input checked="" type="checkbox"/>
O	DUAL 24VDC POWER SUPPLIES NOT INSTALLED	YES NO
P	POWER METER	YES <input checked="" type="checkbox"/>
S	HARMONIC FILTER NOT INSTALLED	YES NO
T	GENERATOR CONNECTION SOCKET INSTALLED	YES <input checked="" type="checkbox"/>

NOTE: Urban Utilities accepts no liability for the use of typical drawings, which must be adapted to the requirements of the particular system and accompanied by detailed designs certified by RPEQ

Sheet 01

AMENDMENTS							AS CONSTRUCTED CERTIFICATION FOR DRAWING REVISION , I CERTIFY THAT THE AS CONSTRUCTED DETAILS SHOWN ON THIS PLAN ARE A TRUE AND ACCURATE RECORD OF THE WORKS.			ENGINEERING CERTIFICATION SIGNATURE RPEQ No. DISCIPLINE DATE SIGNATURE RPEQ No. DISCIPLINE DATE				DESIGN DRAFTING DRAFTED BY DATE DESIGNED BY DATE		PROJECT TEAM		ASSET/PROJECT WB??? TEST ROAD, WATER BOOSTER WATER BOOSTER PUMP STATION		DRAWING TITLE PUMP STATION SWITCHBOARD WB???-1040-SWB-0001 DRAWING INDEX	
REV	DATE	DESCRIPTION	DESIGNER	RPEQ SIGNED	RPEQ NO.	COMPANY NAME	SIGNATURE	DATE	NAME	RPEQ No.	DESIGN MANAGER'S SIGNATURE	DATE	URBAN UTILITIES' CIP CODE			DRAWING STATUS FOR REVIEW		URBAN UTILITIES DRAWING No. WB???-1000-EE-DRG-0001		REV. 2	
							DISCIPLINE	COMPANY NAME			PROJECT MANAGER'S SIGNATURE	DATE	URBAN UTILITIES' DESIGN W/O No. URBAN UTILITIES CONSTRUCTION W/O No.								

ENERGEX SUPPLY 3 PHASE 400VAC
FEED FROM <<POLE/P LLAR No>>
SERVICE FUSE t b a A t b a k A

FAULT LEVEL AT
SWITCHBOARD t b a k A
SWITCHBOARD RATING 125A
MAX DEMAND t b a A

MAIN EARTH
STAKE

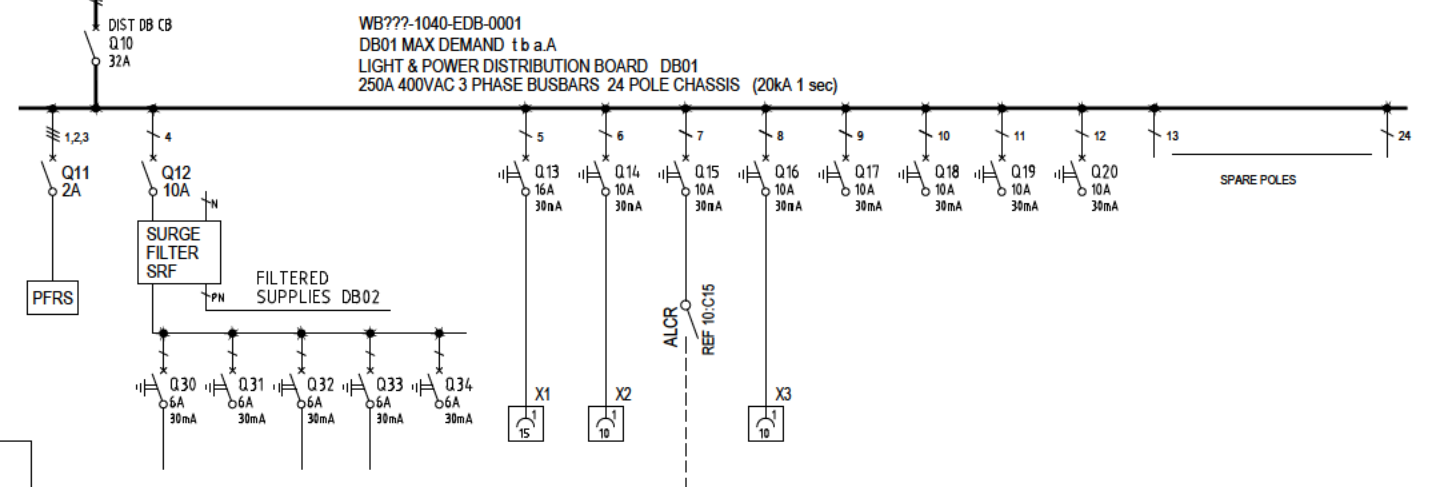
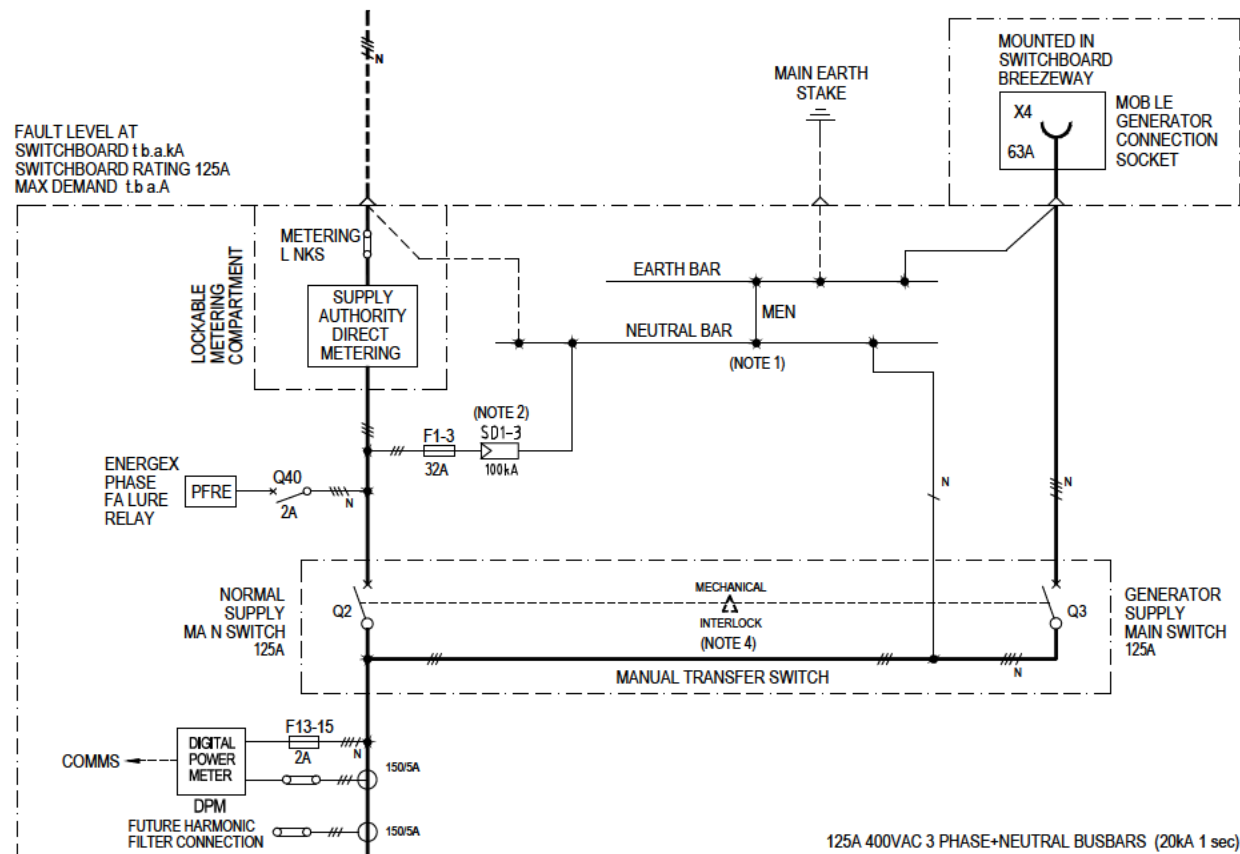
MOUNTED IN
SWITCHBOARD
BREEZEWAY
X4
63A

MOB LE
GENERATOR
CONNECTION
SOCKET

WB??? TEST ROAD, WATER BOOSTER WATER BOOSTER PUMP STATION SWITCHBOARD WB???-1040-SWB-0001

NOTES

1. M.E.N. LNK TO BE PROVIDED AS PER AS:3000,2018 SECTION 5.
2. SURGE PROTECTION DEVICE TO BE AS CLOSE TO THE INCOMER AS POSS BLE. CONDUCTORS SHALL BE A MINIMUM 6mm² AT A MAXIMUM LENGTH OF 300mm TO BE USED OVER THE SHORTEST AND MOST DIRECT PATH WITH NO LOOPS CONNECTED TO NEUTRAL.
3. SWITCHBOARD TO BE MANUFACTURED TO FORM 4a. DB'S TO FORM 1.
4. INCOMER MCCB'S TO BE MECHANICALLY INTERLOCKED.
5. CIRCUIT BREAKER RAT NG'S TO SUIT FAULT LEVEL & LOAD TO ENSURE TYPE 2 CO-ORDINATION WITH CONTACTORS & OVERLOADS TO AS IEC 60947.4.1:2015
6. MCCB'S ARE 3 POLE CIRCUIT BREAKERS. Q3 IS A 4 POLE CIRCUIT BREAKER.
7. ALL CIRCUIT BREAKERS TO BE PADLOCKABLE. LOCKING IS TO BE INDEPENDENT OF ESCUTCHEON.
8. ALL LIGHT AND POWER CIRCUITS SHALL BE FITTED WITH RCD PROTECTION, SET AT 30mA



TAG	WB???-1040-AHF-0001
DESCRIPTION	FUTURE HARMONIC FILTER
STARTER TYPE	FEEDER
RATING (kW)	
FLC (A)	
CABLE	
SCHEMATIC DIAG.	SHEET 10

TAG	WB???-PUS-0111-0001
DESCRIPTION	BOOSTER PUMP No1
STARTER TYPE	VSD
RATING (kW)	<?>kW
FLC (A)	<?>A
CABLE	PUS-0111-0001-P1
SCHEMATIC DIAG.	SHEET 04

TAG	WB???-PUS-0111-0002
DESCRIPTION	BOOSTER PUMP No2
STARTER TYPE	VSD
RATING (kW)	<?>kW
FLC (A)	<?>A
CABLE	PUS-0111-0002-P1
SCHEMATIC DIAG.	SHEET 04

AMENDMENTS					
REV	DATE	DESCRIPTION	DESIGNER	RPEQ SIGNED	RPEQ NO.

AS CONSTRUCTED CERTIFICATION FOR DRAWING REVISION					
I CERTIFY THAT THE AS CONSTRUCTED DETAILS SHOWN ON THIS PLAN ARE A TRUE AND ACCURATE RECORD OF THE WORKS.					
SIGNATURE		DATE			
NAME		RPEQ No.		COMPANY NAME	
DISCIPLINE		COMPANY NAME			

ENGINEERING CERTIFICATION			
SIGNATURE	RPEQ No.	DISCIPLINE	DATE
SIGNATURE	RPEQ No.	DISCIPLINE	DATE
DESIGN MANAGER'S SIGNATURE	DATE		
PROJECT MANAGER'S SIGNATURE	DATE		

DESIGN DRAFTING	
DRAFTED BY	DATE
DESIGNED BY	DATE
URBAN UTILITIES CIP CODE	
URBAN UTILITIES DESIGN W/O No.	
URBAN UTILITIES CONSTRUCTION W/O No.	

PROJECT TEAM	

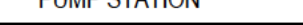
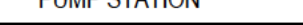
ASSET/PROJECT	
WB??? TEST ROAD, WATER BOOSTER WATER BOOSTER PUMP STATION	
DRAWING STATUS	
FOR REVIEW	

DRAWING TITLE	
PUMP STATION SWITCHBOARD WB???-1040-SWB-0001 SINGLE LINE DIAGRAM 400VAC & 230VAC	
URBAN UTILITIES DRAWING No.	
WB???-1000-EE-DRG-0002	
REV.	2

Sheet 02





AMENDMENTS							AS CONSTRUCTED CERTIFICATION FOR DRAWING REVISION		ENGINEERING CERTIFICATION				DESIGN DRAFTING		PROJECT TEAM		ASSET/PROJECT		DRAWING TITLE		
							I CERTIFY THAT THE AS CONSTRUCTED DETAILS SHOWN ON THIS PLAN ARE A TRUE AND ACCURATE RECORD OF THE WORKS.		SIGNATURE _____ RPEQ No. _____ DISCIPLINE _____ DATE _____				DRAFTED BY _____ DATE _____				WB??? TEST ROAD, WATER BOOSTER WATER BOOSTER PUMP STATION		PUMP STATION SWITCHBOARD WB???-1040-SWB-0001 POWER DISTRIBUTION SCHEMATIC DIA 400VAC & 230VAC		
							SIGNATURE _____ DATE _____		SIGNATURE _____ RPEQ No. _____ DISCIPLINE _____ DATE _____				DESIGNED BY _____ DATE _____								
							NAME _____ RPEQ No. _____		DESIGN MANAGER'S SIGNATURE _____ DATE _____				URBAN UTILITIES CIP CODE _____								
							DISCIPLINE _____ COMPANY NAME _____		PROJECT MANAGER'S SIGNATURE _____ DATE _____				URBAN UTILITIES DESIGN W/O No. _____								
REV	DATE	DESCRIPTION			DESIGNER	RPEQ SIGNED	RPEQ NO.	COMPANY NAME									DRAWING STATUS		URBAN UTILITIES DRAWING No.		REV.
														FOR REVIEW			WB???-1000-EE-DRG-0003		2		

RESERVED FOR BOOSTER PUMP No3 & 4

LEGEND:

⊗

RTU MARSH. CCT BKR TERM

●

RTU MARSH. FUSE TERM.

○

RTU MARSH. LINK TERM.

■

RTU TERM NAL

⊘

SWITCHBOARD TERM.

■

DEVICE TERMINAL

⬮

DISCONNECT TERM NAL c/w COMPONENT BLOCK

Sheet 05

AMENDMENTS						
REV	DATE	DESCRIPTION	DESIGNER	RPEQ SIGNED	RPEQ NO.	COMPANY NAME

AS CONSTRUCTED CERTIFICATION

FOR DRAWING REVISION

I CERTIFY THAT THE AS CONSTRUCTED
DETAILS SHOWN ON THIS PLAN ARE A TRUE
AND ACCURATE RECORD OF THE WORKS.

SIGNATURE

DATE

NAME

RPEQ No.

DISCIPLINE

COMPANY NAME

ENGINEERING CERTIFICATION

SIGNATURE

RPEQ No.

DISCIPLINE

DATE

SIGNATURE

RPEQ No.

DISCIPLINE

DATE

DESIGN MANAGER'S SIGNATURE

DATE

PROJECT MANAGER'S SIGNATURE

DATE

DESIGN DRAFTING

DRAFTED BY

DATE

DESIGNED BY

DATE

URBAN UTILITIES CIP CODE

URBAN UTILITIES DESIGN W/O No.

URBAN UTILITIES CONSTRUCTION W/O No.

PROJECT TEAM

UrbanUtilities

ASSET/PROJECT

WB???

TEST ROAD, WATER BOOSTER
WATER BOOSTER
PUMP STATION

DRAWING STATUS

FOR REVIEW

DRAWING TITLE

PUMP STATION SWITCHBOARD
WB???-1040-SWB-0001
SCHEMATIC DIAGRAM
WATER BOOSTER PUMPS 3 & 4

URBAN UTILITIES DRAWING No.

WB???-1000-EE-DRG-0005

REV.


2

RESERVED FOR BOOSTER PUMP No5

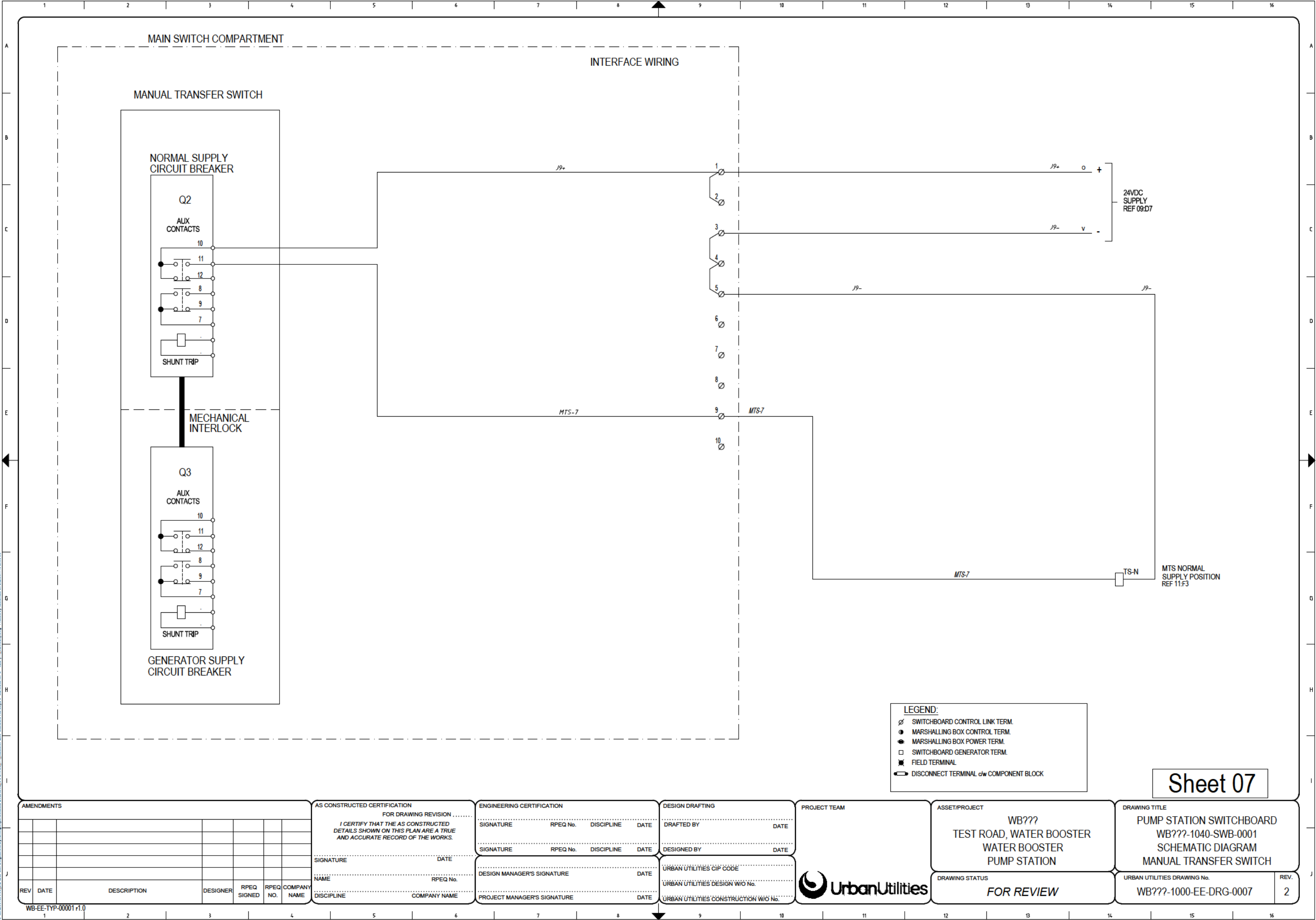
LEGEND:

- ⊗ RTU MARSH. CCT BKR TERM.
- RTU MARSH. FUSE TERM.
- RTU MARSH. LINK TERM.
- ▣ RTU TERMINAL
- ⊘ SWITCHBOARD TERM.
- DEVICE TERM NAL
- ⎓ DISCONNECT TERM NAL c/w COMPONENT BLOCK

Sheet 06

AMENDMENTS							AS CONSTRUCTED CERTIFICATION FOR DRAWING REVISION I CERTIFY THAT THE AS CONSTRUCTED DETAILS SHOWN ON THIS PLAN ARE A TRUE AND ACCURATE RECORD OF THE WORKS.			ENGINEERING CERTIFICATION				DESIGN DRAFTING		PROJECT TEAM		ASSET/PROJECT		DRAWING TITLE			
										SIGNATURE RPEQ No. DISCIPLINE DATE				DRAFTED BY DATE				WB??? TEST ROAD, WATER BOOSTER WATER BOOSTER PUMP STATION		PUMP STATION SWITCHBOARD WB???-1040-SWB-0001 SCHEMATIC DIAGRAM WATER BOOSTER PUMP 5			
										SIGNATURE RPEQ No. DISCIPLINE DATE				DESIGNED BY DATE									
							SIGNATURE DATE			DESIGN MANAGER'S SIGNATURE DATE				URBAN UTILITIES CIP CODE				DRAWING STATUS FOR REVIEW		URBAN UTILITIES DRAWING No. WB???-1000-EE-DRG-0006		REV. 2	
							NAME RPEQ No.			URBAN UTILITIES DESIGN W/O No.				URBAN UTILITIES CONSTRUCTION W/O No.									
REV DATE DESCRIPTION DESIGNER RPEQ SIGNED RPEQ NO. COMPANY NAME							DISCIPLINE COMPANY NAME			PROJECT MANAGER'S SIGNATURE DATE													

WB-EE-TYP-00001 r1.0



RESERVED FOR GENERATOR CONTROLS

LEGEND:

- ⊗ RTU MARSH. CCT BKR TERM
- RTU MARSH. FUSE TERM.
- RTU MARSH. LINK TERM.
- RTU TERM NAL
- ⊘ SWITCHBOARD TERM.
- ⊠ F ELD TERM.

RTU

- D11-02 DIGITAL INPUT
- D01-02 DIGITAL OUTPUT
- A11-02 ANALOG INPUT
- A01-02 ANALOG OUTPUT

Sheet 08

AMENDMENTS

REV	DATE	DESCRIPTION	DESIGNER	RPEQ SIGNED	RPEQ NO.	COMPANY NAME

AS CONSTRUCTED CERTIFICATION

FOR DRAWING REVISION
I CERTIFY THAT THE AS CONSTRUCTED
DETAILS SHOWN ON THIS PLAN ARE A TRUE
AND ACCURATE RECORD OF THE WORKS.

SIGNATURE DATE
NAME RPEQ No.
DISCIPLINE COMPANY NAME

ENGINEERING CERTIFICATION

SIGNATURE RPEQ No. DISCIPLINE DATE
SIGNATURE RPEQ No. DISCIPLINE DATE

DESIGN MANAGER'S SIGNATURE DATE
PROJECT MANAGER'S SIGNATURE DATE

DESIGN DRAFTING

DRAFTED BY DATE
DESIGNED BY DATE

URBAN UTILITIES CIP CODE
URBAN UTILITIES DESIGN W/O No.
URBAN UTILITIES CONSTRUCTION W/O No.

PROJECT TEAM



ASSET/PROJECT

WB???
TEST ROAD, WATER BOOSTER
WATER BOOSTER
PUMP STATION

DRAWING STATUS

FOR REVIEW

DRAWING TITLE

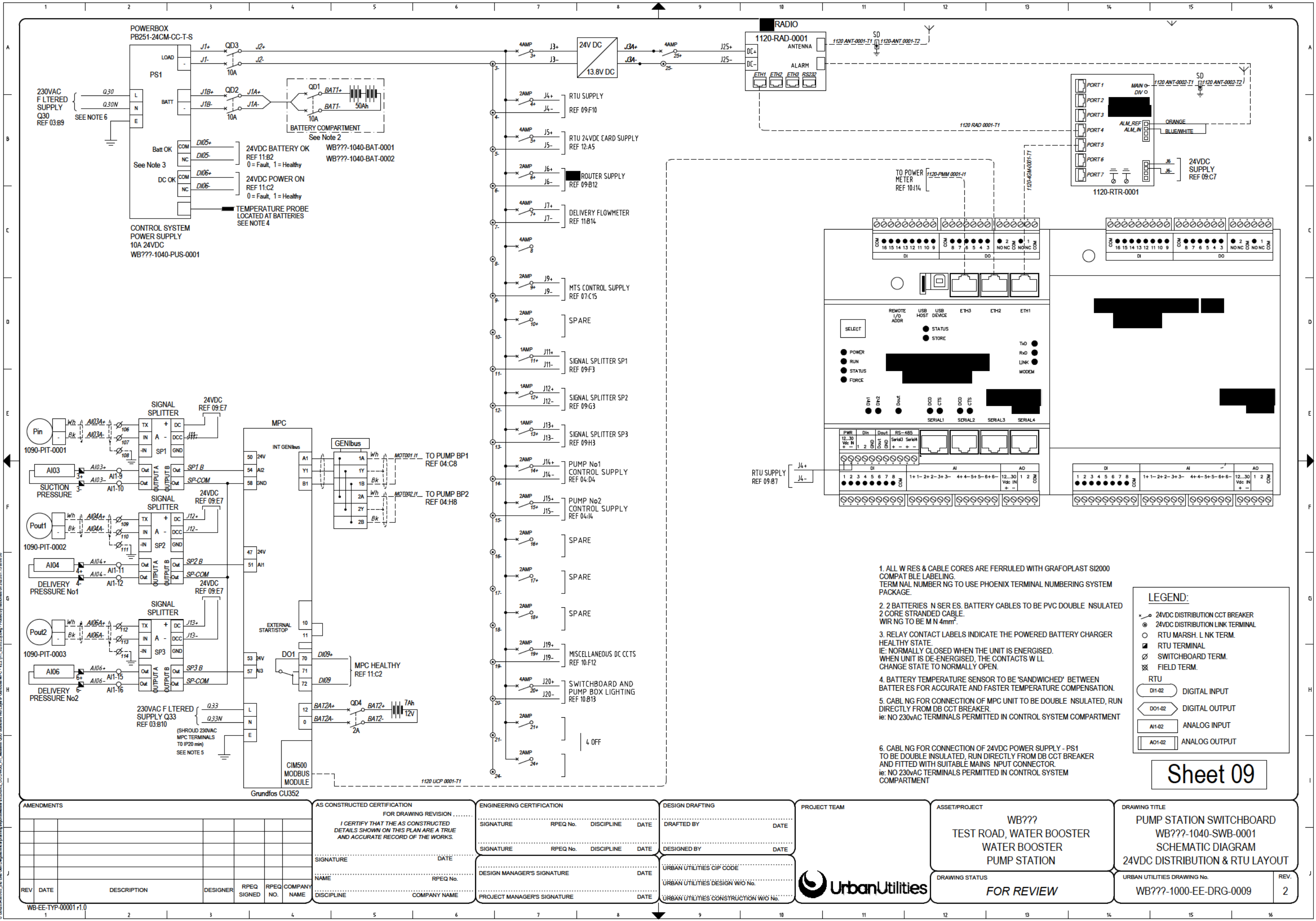
PUMP STATION SWITCHBOARD
WB???-1040-SWB-0001
SCHEMATIC DIAGRAM
GENERATOR CONTROL


URBAN UTILITIES DRAWING No.

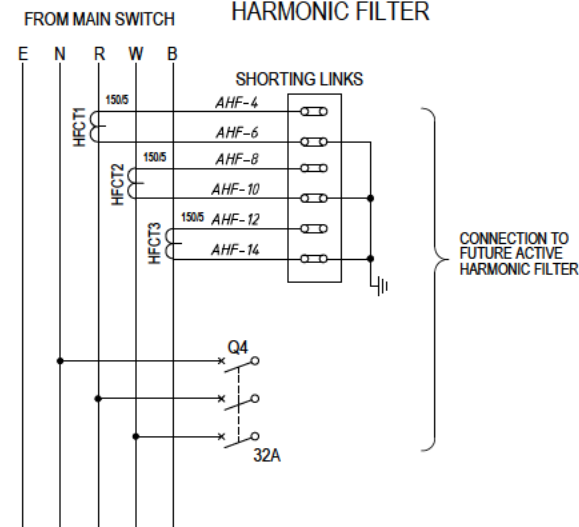
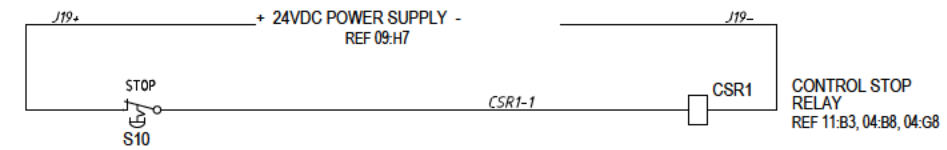
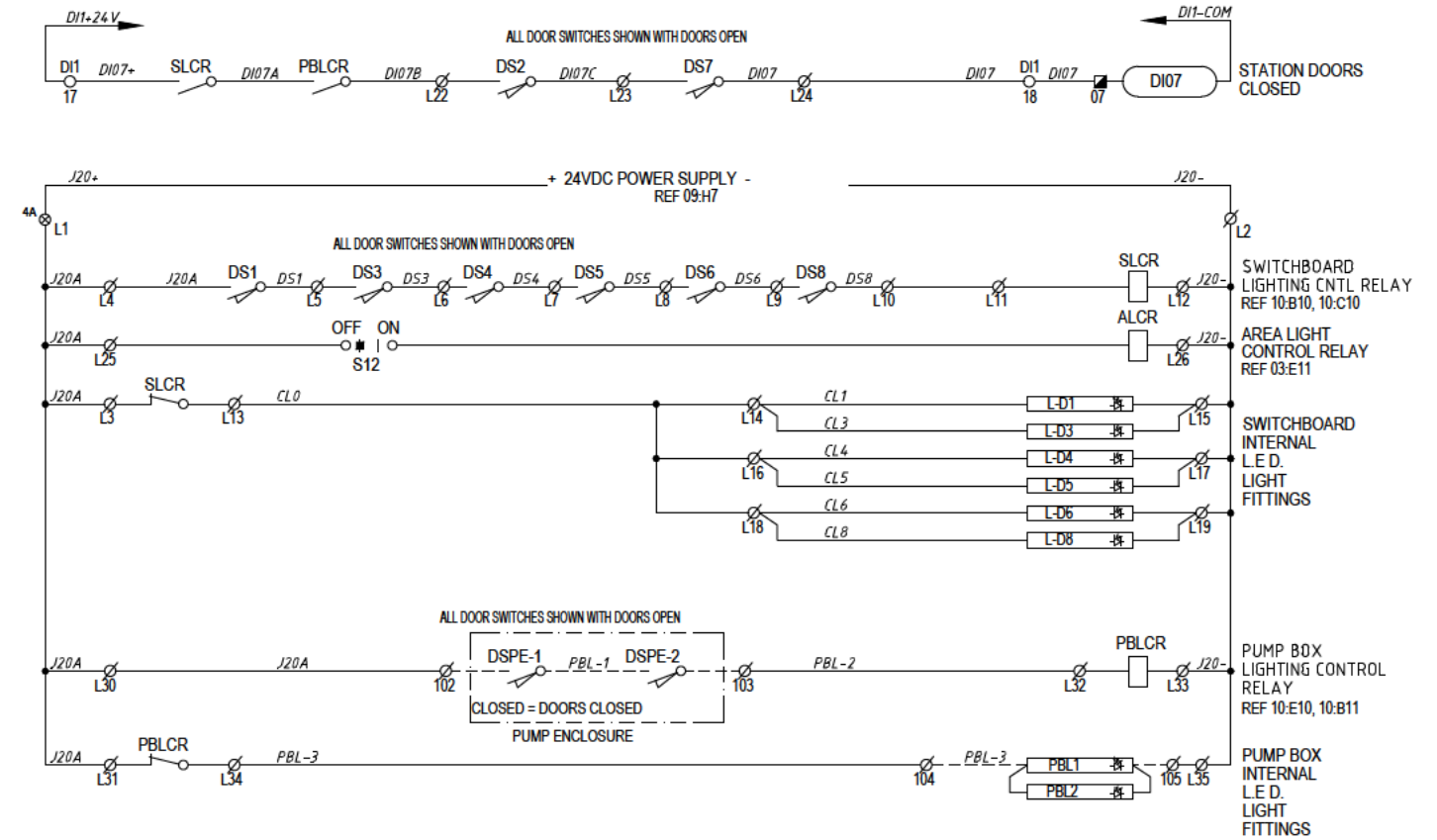
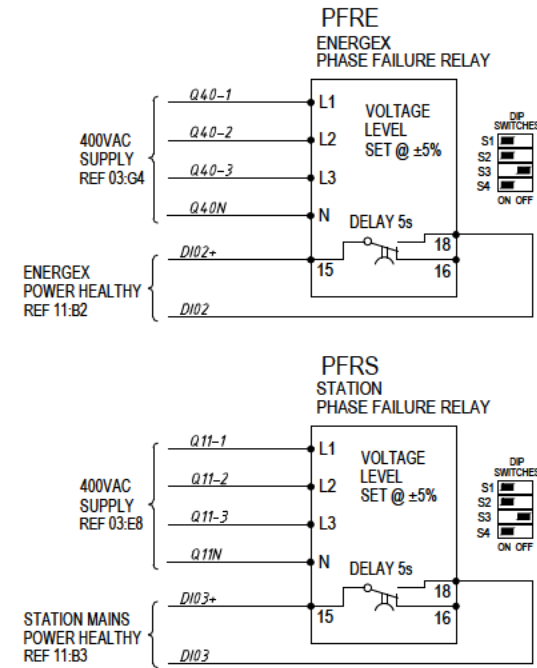
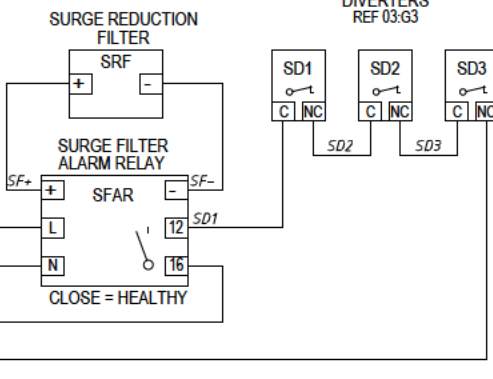
WB???-1000-EE-DRG-0008

REV.

2



AMENDMENTS						AS CONSTRUCTED CERTIFICATION FOR DRAWING REVISION		ENGINEERING CERTIFICATION		DESIGN DRAFTING		PROJECT TEAM		ASSET/PROJECT		DRAWING TITLE			
						I CERTIFY THAT THE AS CONSTRUCTED DETAILS SHOWN ON THIS PLAN ARE A TRUE AND ACCURATE RECORD OF THE WORKS.		SIGNATURE RPEQ No. DISCIPLINE DATE		DESIGNED BY DATE				WB??? TEST ROAD, WATER BOOSTER WATER BOOSTER PUMP STATION		PUMP STATION SWITCHBOARD WB???-1040-SWB-0001 SCHEMATIC DIAGRAM 24VDC DISTRIBUTION & RTU LAYOUT			
						SIGNATURE RPEQ No. DISCIPLINE DATE		DESIGNED BY DATE		URBANTILITIES CIP CODE									
						SIGNATURE DATE		DESIGN MANAGER'S SIGNATURE DATE		URBANTILITIES DESIGN W/O No.		DRAWING STATUS		FOR REVIEW		URBANTILITIES DRAWING No.			
						NAME RPEQ No.		PROJECT MANAGER'S SIGNATURE DATE		URBANTILITIES CONSTRUCTION W/O No.						REV.			
REV	DATE	DESCRIPTION	DESIGNER	RPEQ SIGNED	RPEQ NO.	COMPANY NAME	DISCIPLINE	COMPANY NAME									WB???-1000-EE-DRG-0009	2	
WB-EE-TYP-00001 r1.0																			
1		2	3			4		5	6	7	8	9	10	11	12	13	14	15	16




AMENDMENTS						
REV	DATE	DESCRIPTION	DESIGNER	RPEQ SIGNED	RPEQ NO.	COMPAN NAME

AS CONSTRUCTED CERTIFICATION	
FOR DRAWING REVISION	
I CERTIFY THAT THE AS CONSTRUCTED DETAILS SHOWN ON THIS PLAN ARE A TRUE AND ACCURATE RECORD OF THE WORKS.	
SIGNATURE	DATE
NAME	RPEQ No.
DISCIPLINE	COMPANY NAME

ENGINEERING CERTIFICATION			
SIGNATURE	RPEQ No.	DISCIPLINE	DATE
SIGNATURE	RPEQ No.	DISCIPLINE	DATE
DESIGN MANAGER'S SIGNATURE			DATE
PROJECT MANAGER'S SIGNATURE			DATE

DESIGN DRAFTING	
DRAFTED BY	DATE
DESIGNED BY	DATE
URBAN UTILITIES CIP CODE	
URBAN UTILITIES DESIGN W/O No.	
URBAN UTILITIES CONSTRUCTION W/O No.	

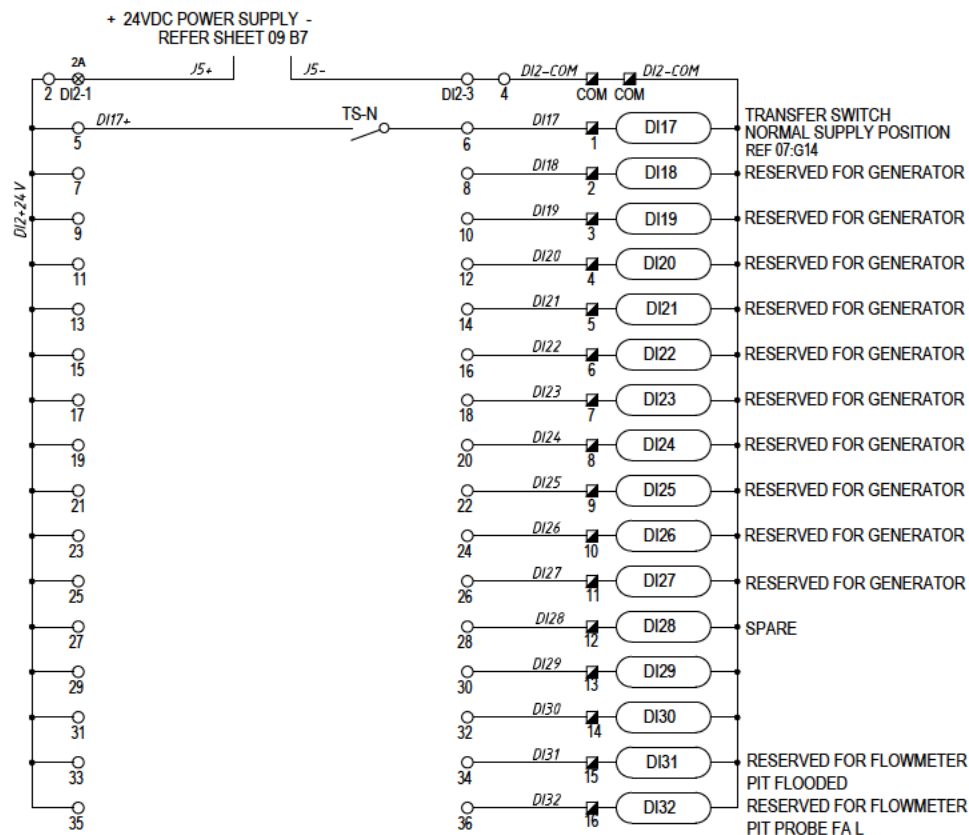
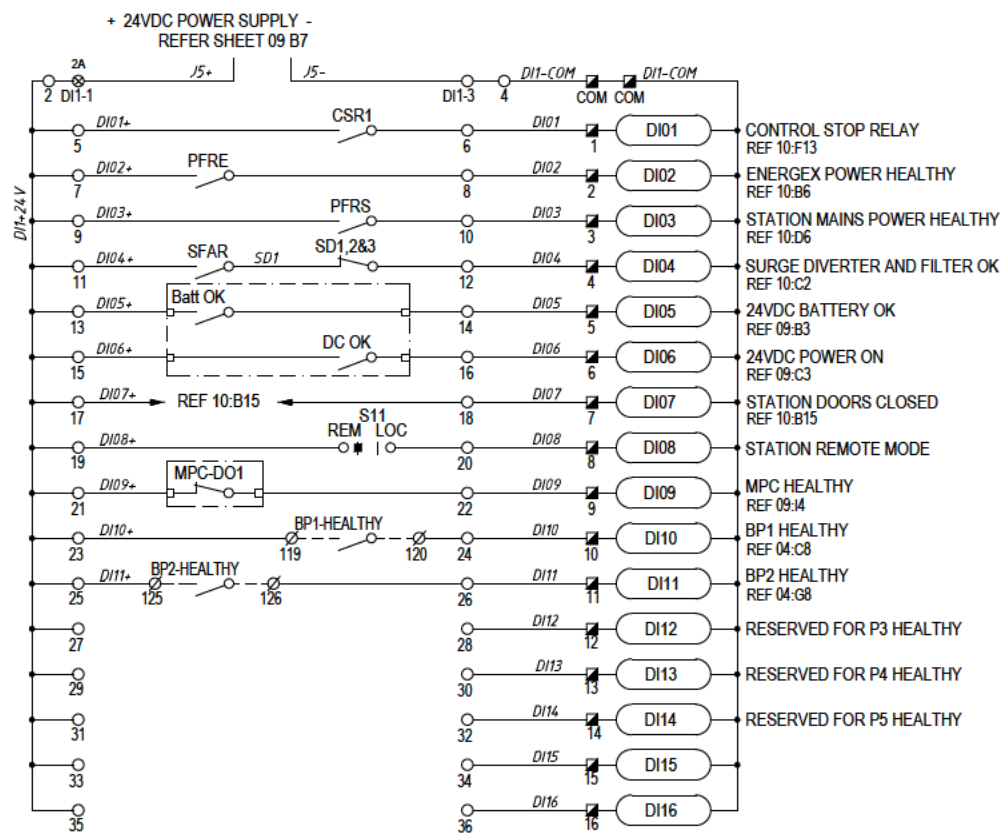
PROJECT TEAM

 UrbanUtilities

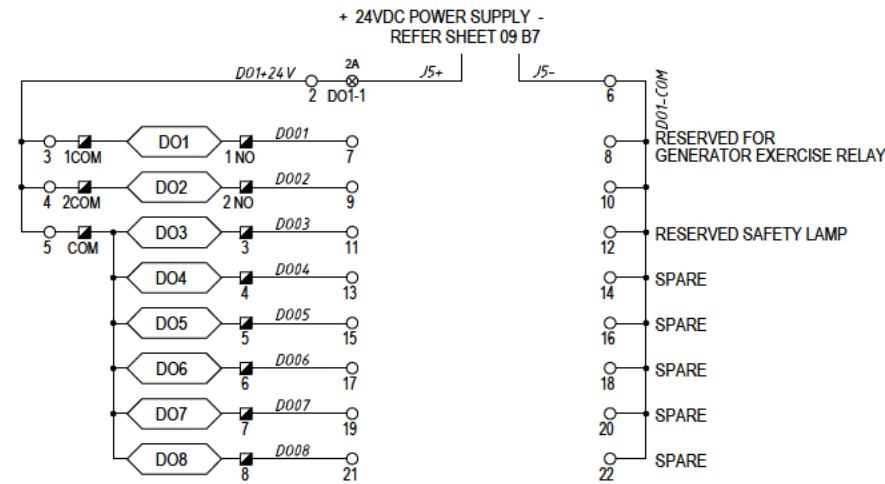
ASSET/PROJECT	WB???
	TEST ROAD, WATER BOOSTER
	WATER BOOSTER
	PUMP STATION
DRAWING STATUS	FOR REVIEW

DRAWING TITLE PUMP STATION SWITCHBOARD WB???-1040-SWB-0001 SCHEMATIC DIAGRAM COMMON CONTROLS		REV.
URBAN UTILITIES DRAWING No. WB???-1000-EE-DRG-0010		2

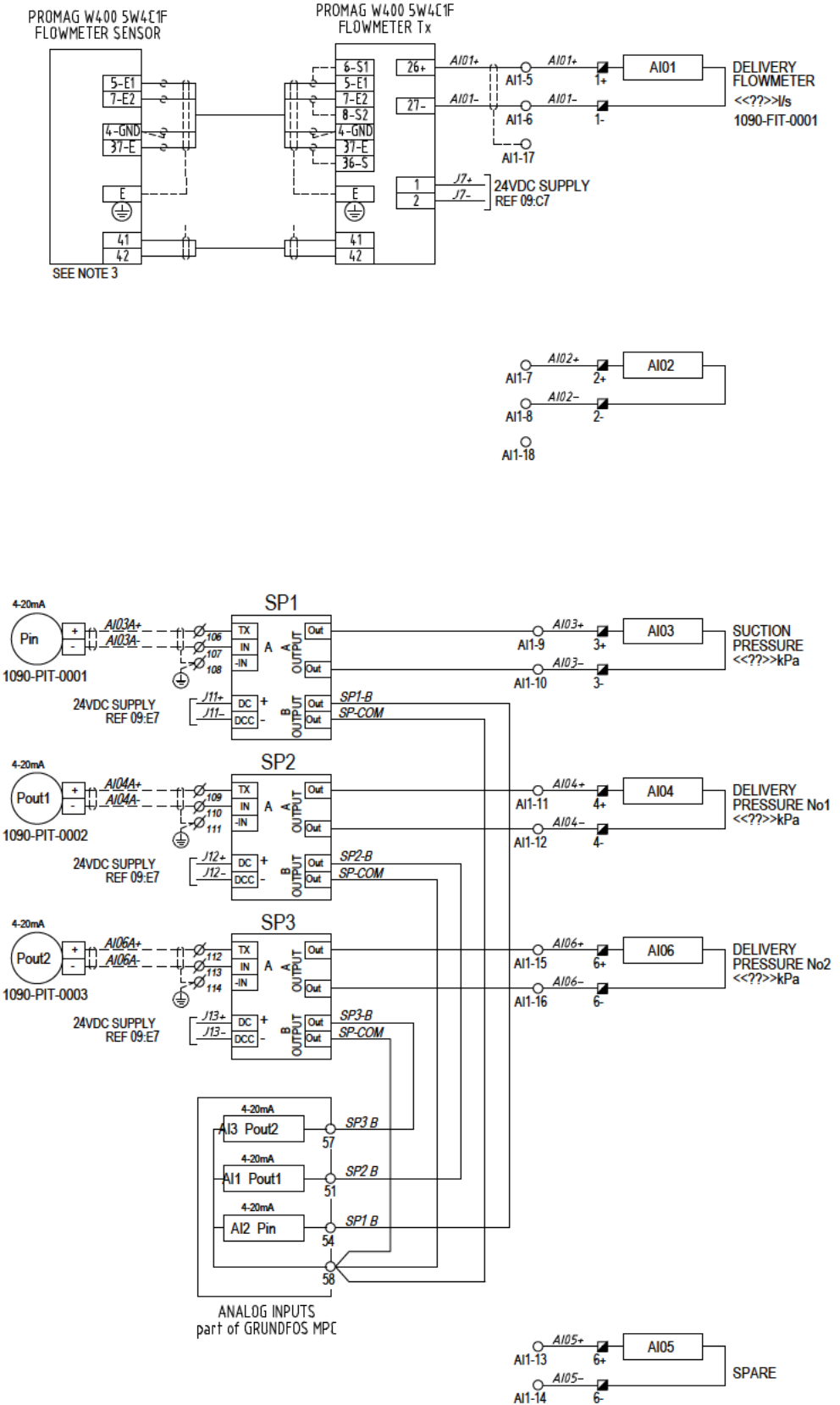
RTU DIGITAL INPUTS



RTU DIGITAL OUTPUTS



RTU ANALOG INPUTS



LEGEND:

- RTU MARSH. CCT BKR TERM
- RTU MARSH. FUSE TERM.
- RTU MARSH. LINK TERM.
- RTU TERMINAL
- SWITCHBOARD TERM.
- F ELD TERM.

RTU

- DI1-02 DIGITAL INPUT
- DO1-02 DIGITAL OUTPUT
- AI1-02 ANALOG INPUT
- AO1-02 ANALOG OUTPUT

NOTES

- ALL W RES & CABLE CORES ARE FERRULED WITH GRAFOPLAST SI2000 COMPATIBLE LABEL NG. TERMINAL NUMBERING TO USE PHOENIX TERM NAL NUMBERING SYSTEM PACKAGE.
- ALL FUSES ARE 500mA EXCEPT WHERE NOTED OTHERWISE.

3. FIT GROUNDING RING

Sheet 11

AMENDMENTS

REV	DATE	DESCRIPTION	DESIGNER	RPEQ SIGNED	RPEQ NO.	COMPANY NAME

AS CONSTRUCTED CERTIFICATION

FOR DRAWING REVISION

I CERTIFY THAT THE AS CONSTRUCTED DETAILS SHOWN ON THIS PLAN ARE A TRUE AND ACCURATE RECORD OF THE WORKS.

SIGNATURE	DATE

ENGINEERING CERTIFICATION

SIGNATURE	RPEQ No.	DISCIPLINE	DATE

DESIGN DRAFTING

SIGNATURE	DATE

PROJECT TEAM

SIGNATURE	DATE

ASSET/PROJECT

WB???

TEST ROAD, WATER BOOSTER

WATER BOOSTER

PUMP STATION

DRAWING STATUS

FOR REVIEW

DRAWING TITLE

PUMP STATION SWITCHBOARD

WB???-1040-SWB-0001

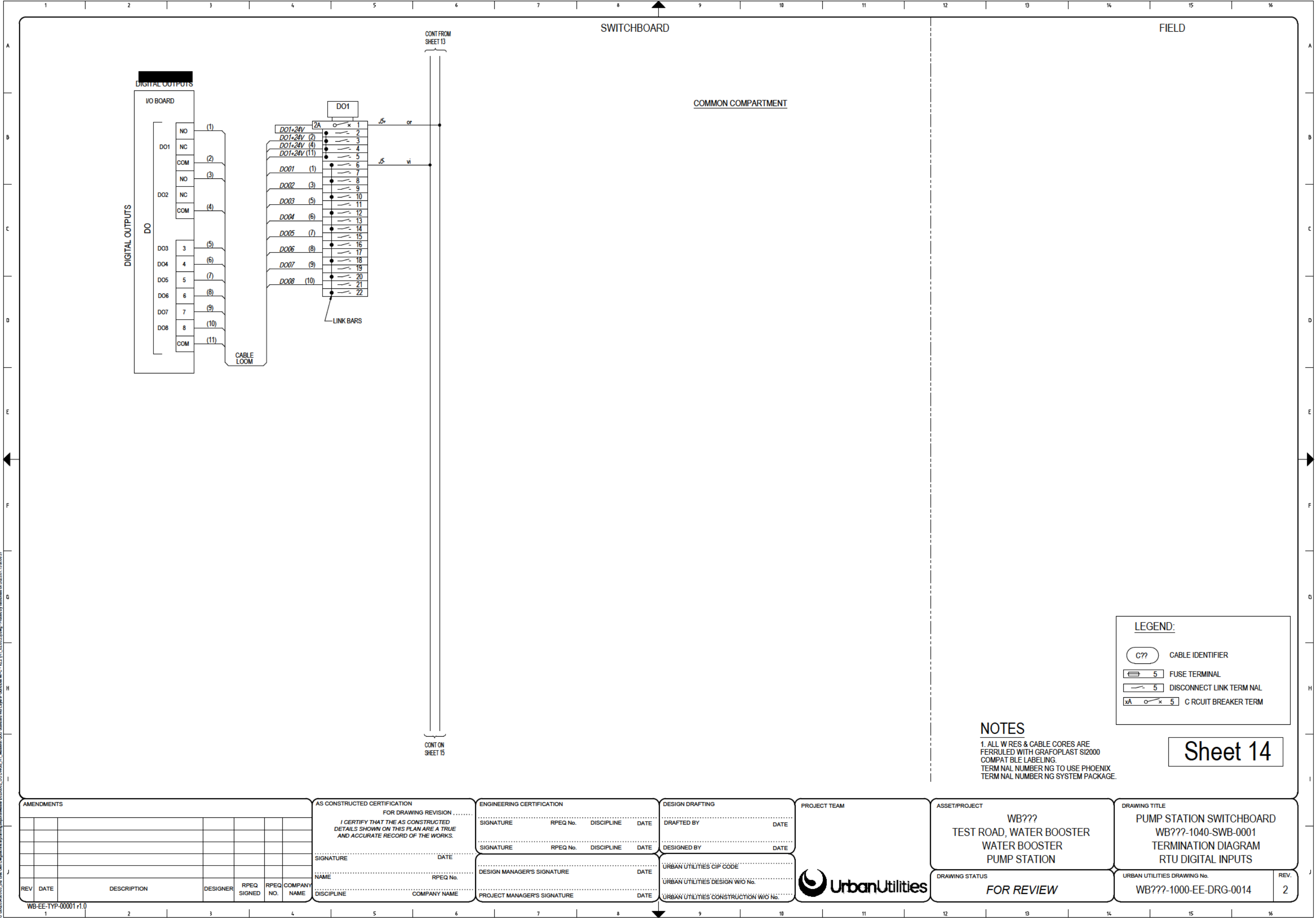
SCHEMATIC DIAGRAM

COMMON RTU I/O

URBAN UTILITIES DRAWING No.

WB???-1000-EE-DRG-0011

REV.



AMENDMENTS						
REV	DATE	DESCRIPTION	DESIGNER	RPEQ SIGNED	RPEQ NO.	COMPANY NAME

AS CONSTRUCTED CERTIFICATION	
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SIGNATURE	DATE
NAME	RPEQ No.
DISCIPLINE	COMPANY NAME

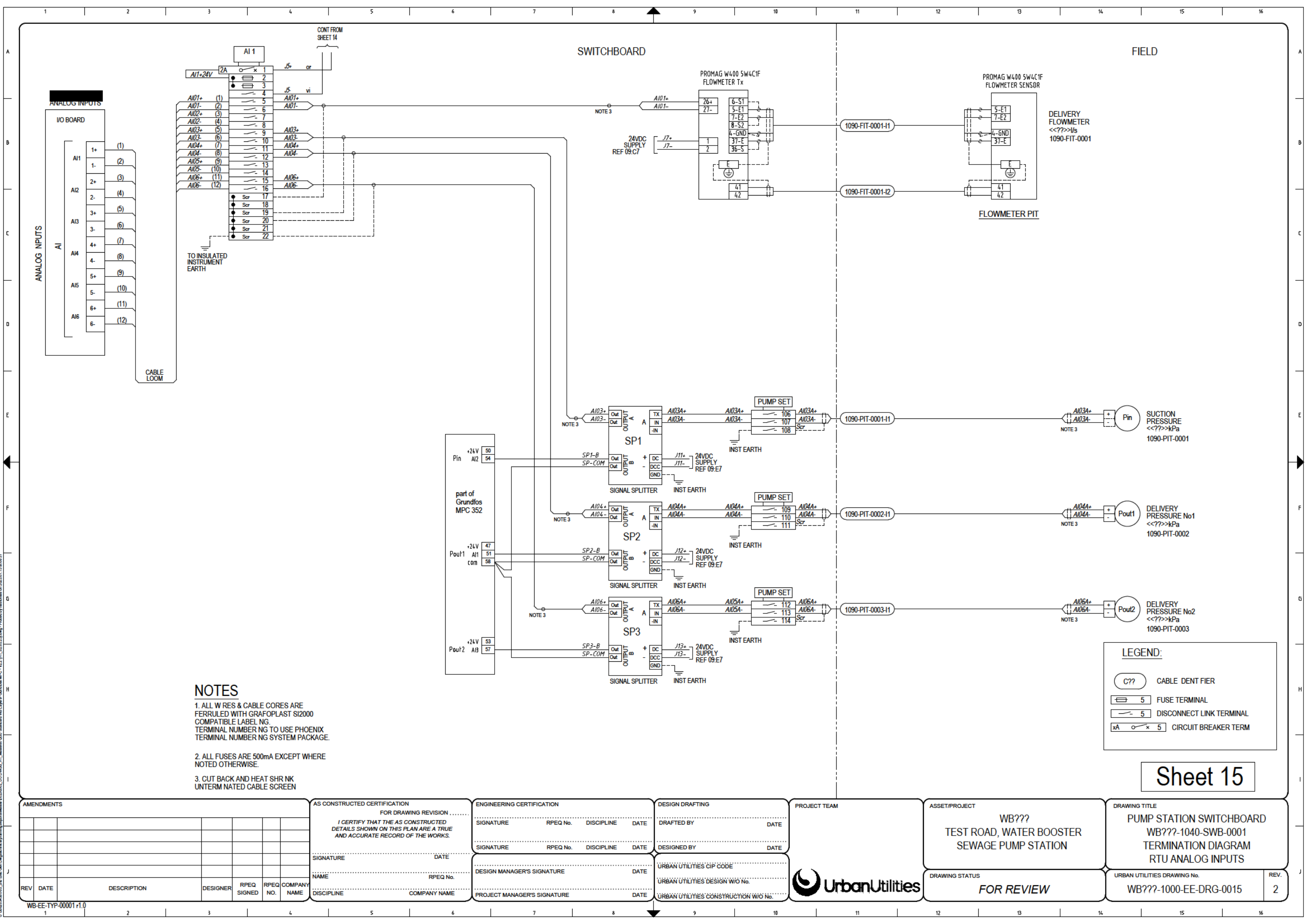
ENGINEERING CERTIFICATION			
SIGNATURE	RPEQ No.	DISCIPLINE	DATE
SIGNATURE	RPEQ No.	DISCIPLINE	DATE
DESIGN MANAGER'S SIGNATURE	DATE	URBAN UTILITIES CIP CODE	
DESIGN MANAGER'S SIGNATURE	DATE	URBAN UTILITIES DESIGN W/O No.	
DESIGN MANAGER'S SIGNATURE	DATE	URBAN UTILITIES CONSTRUCTION W/O No.	

DESIGN DRAFTING	
DRAFTED BY	DATE
DESIGNED BY	DATE
URBAN UTILITIES CIP CODE	
URBAN UTILITIES DESIGN W/O No.	
URBAN UTILITIES CONSTRUCTION W/O No.	

PROJECT TEAM	
URBAN UTILITIES	

ASSET/PROJECT	
WB??? TEST ROAD, WATER BOOSTER WATER BOOSTER PUMP STATION	
DRAWING STATUS	
FOR REVIEW	

DRAWING TITLE	
PUMP STATION SWITCHBOARD WB???-1040-SWB-0001 TERMINATION DIAGRAM RTU DIGITAL INPUTS	
URBAN UTILITIES DRAWING No.	REV.
WB???-1000-EE-DRG-0014	2




AMENDMENTS							AS CONSTRUCTED CERTIFICATION FOR DRAWING REVISION I CERTIFY THAT THE AS CONSTRUCTED DETAILS SHOWN ON THIS PLAN ARE A TRUE AND ACCURATE RECORD OF THE WORKS.				ENGINEERING CERTIFICATION				DESIGN DRAFTING				PROJECT TEAM		ASSET/PROJECT WB??? TEST ROAD, WATER BOOSTER SEWAGE PUMP STATION				DRAWING TITLE PUMP STATION SWITCHBOARD WB???-1040-SWB-0001 TERMINATION DIAGRAM RTU ANALOG INPUTS																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
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U 1301202034661705_Sid_Elec_Gen_Dyn/technical/planning_report/Master/20230502_UU DWGS_HT_Material QIU Standard WB Layer-Gundibos MPC - V2.2 (HT_02.05.23).dwg - Plotted by halthomas on 2023.07.13 at 08:38

CABLE No.	STATUS	SIZE	CORES	TYPE	LENGTH (m)	FROM	TO	CABLE FUNCTION	NOTES
1040-SWB-0001-P1	NEW	16mm ²	4Core Note 3	XLPE/PVC -X90		Supply Authority Supply <<POLE/PILLAR No?>>	Switchboard	Incoming Mains Supply	
1040-SWB-0001-E1	NEW	6mm ²	1C	Building Wire - GY		Switchboard	Earth stake See Note 2	Main Earth	loop to Each Earth Stake as Required
1040-SWB-0001-E2-Ex	NEW	10mm ²	1C	Building Wire - GY		Switchboard main earth bar	Structural framework, Cable ladder	Equipotential Bonding where required	Bonding Cables - See Note 4
1040-GEN-0001-P1	NEW	25mm ²	4Core+E	XLPE		Switchboard	Generator Power Appliance Inlet- X4	Generator Supply	
1040-GEN-0001-P2	NEW	2.5mm ²	2C+E	PVC/PVC -V90		Switchboard	Generator Aux Power Outlet- X3	230VAC Supply to Outlet X3	
PUS-0111-0001-P1	NEW	<?>mm ²	3C+E	PVC/PVC -V90		Switchboard	Booster Pump 1 Motor	Pump 1 - 3 Phase supply	
PUS-0111-0002-P1	NEW	<?>mm ²	3C+E	PVC/PVC -V90		Switchboard	Booster Pump 2 Motor	Pump 2 - 3 Phase supply	
1040-GLT-0001-P1	NEW	2.5mm ²	2C+E	PVC/PVC -V90		Switchboard	SwBd Mounted Area Flood Light	Area lighting	
1040-SEC-0001-C1	NEW	1.0mm ²	1PR	OS Instrument		Switchboard	Pump Box Pump	Security monitoring and light switch	Overall Screened Instrument Cable
1040-GLT-0005-P1	NEW	1.5mm ²	2C+E	PVC/PVC -V90		Switchboard	Pump Box Pump	Lighting	
PUS-0111-0001-C1	NEW	0.5mm ²	4PR	Instrolex		Switchboard	Pump Box Pump 1	Pump 1 Control & Interlocks	
PUS-0111-0002-C1	NEW	0.5mm ²	4PR	Instrolex		Switchboard	Pump Box Pump 2	Pump 2 Control & Interlocks	
								Pump 3 Control & Interlocks	
PUS-0111-0001-I1	NEW	0.5mm ²	1PR	FIELDBUS		Switchboard - MPC GENibus	Pump Box Pump 1	GENibus - Pump1	
PUS-0111-0002-I1	NEW	0.5mm ²	1PR	FIELDBUS		Switchboard - MPC GENibus	Pump Box Pump 2	GENibus - Pump2	
1090-PIT-0001-I1	NEW		1PR	Vendor		Switchboard - MPC	Suction Pressure Transmitter	Suction Pressure	
1090-PIT-0002-I1	NEW		1PR	Vendor		Switchboard - MPC	Delivery No1 Pressure Transmitter	Delivery Pressure No1	
1090-PIT-0003-I1	NEW		1PR	Vendor		Switchboard - MPC	Delivery No2 Pressure Transmitter	Delivery Pressure No2	
1090-FIT-0001-I1	NEW		Vendor	Vendor		Switchboard - Delivery Flowmeter TX	Delivery Flowmeter	Flowmeter Sensor Signal	
1090-FIT-0001-I2	NEW		Vendor	Vendor		Switchboard - Delivery Flowmeter TX	Delivery Flowmeter	Flowmeter Sensor Supply	
1120-ANT-0001-T1	NEW		COAX	RG58		Switchboard - RADIO	Switchboard - Surge Diverter SD2	Radio Antenna Feeder	
1120-ANT-0001-T2	NEW		COAX	CNT400		Switchboard - SURGE Diverter SD2	Switchboard - Radio Antenna	Radio Antenna Feeder	
1120-RAD-0001-T1	NEW		Ethernet	Special		Switchboard - Router	Switchboard - Radio	Radio Data	
1120-4GM-0001-T1	NEW		Ethernet	Special		Switchboard - RTU	Switchboard - Router	Switchboard Modem Data	
1120-ANT-0002-T1	NEW		COAX	RG58		Switchboard - Router	Switchboard - Surge Diverter SD1	Antenna Feeder	
1120-ANT-0002-T2	NEW		COAX	CNT400		Switchboard - Surge Diverter SD1	Switchboard - Router Antenna	Antenna Feeder	
1120-UCP-0001-T1	NEW		Ethernet			Switchboard - Grundfos MPC 351 - CIU500	Switchboard - RTU	Grundfos CIU500 Data, Data	
1120-PMM-0001-I1	NEW		Ethernet			Switchboard - RTU	Switchboard - Power Meter	Power Meter Ethernet Comms	

- NOTES:
1. THE CONTRACTOR IS RESPONSIBLE IN DETERMINING THE ACTUAL CABLE LENGTHS REQUIRED ON SITE.
2. EARTH ELECTRODES:
A MINIMUM OF 2 ELECTRODES TO BE DRIVEN TO A DEPTH SUCH THAT THE REQUIRED RESISTANCE IS OBTAINED.
EARTH ELECTRODES SHALL BE LENGTHS OF 19mm x 3000mm COPPER CLAD EXTENDABLE EARTHING RODS.
3. NEUTRAL:
FULL SIZE NEUTRAL TO BE INSTALLED.
4. EQUIPOTENTIAL BONDING:
ALL CABLE LADDER RUNS, METAL PANELS, FRAMEWORK, SUPPORTS SHALL BE ELECTRICALLY CONTINUOUS THROUGHOUT AND BE BONDED TO THE MAIN EARTH BAR.
5. SEPARATION:
CABLE INSTALLATION TO MAINTAIN REQUIRED SEPARATION BETWEEN POWER AND INSTRUMENT/SIGNAL CABLES.

AMENDMENTS						AS CONSTRUCTED CERTIFICATION FOR DRAWING REVISION				ENGINEERING CERTIFICATION				DESIGN DRAFTING		PROJECT TEAM		ASSET/PROJECT		DRAWING TITLE	
						I CERTIFY THAT THE AS CONSTRUCTED DETAILS SHOWN ON THIS PLAN ARE A TRUE AND ACCURATE RECORD OF THE WORKS.				SIGNATURE RPEQ No. DISCIPLINE DATE				DRAFTED BY DATE		WB??? TEST ROAD, WATER BOOSTER WATER BOOSTER PUMP STATION		PUMP STATION SWITCHBOARD WB???-1040-SWB-0001 CABLE SCHEDULE			
						SIGNATURE DATE				SIGNATURE RPEQ No. DISCIPLINE DATE				DESIGNED BY DATE							
						NAME RPEQ No.				DESIGN MANAGER'S SIGNATURE DATE				URBAN UTILITIES CIP CODE				DRAWING STATUS FOR REVIEW		URBAN UTILITIES DRAWING No. WB???-1000-EE-DRG-0019	
						DISCIPLINE COMPANY NAME				PROJECT MANAGER'S SIGNATURE DATE				URBAN UTILITIES DESIGN W/O No.							
														URBAN UTILITIES CONSTRUCTION W/O No.						REV. 2	

ITEM #	DESCRIPTION	LABEL 1	LABEL 2 & 3 (IF NECESSARY)	TEXT HEIGHT	MATERIAL / COLOUR
01					
02	ENERGEX SUPPLY	NORMAL SUPPLY MAIN SWITCH Q2A	(Mount Internal) Q2	10mm 6mm	ABS PLASTIC R/W
03	GENERATOR SUPPLY	GENERATOR SUPPLY MAIN SWITCH Q2B	(Mount Internal) Q3	10mm 6mm	ABS PLASTIC R/W
04	ACTIVE HARMONIC FILTER CIRCUIT BREAKER	HARMONIC FILTER Q3A	(Mount Internal) Q4	10mm 6mm	ABS PLASTIC W/B
05	BOOSTER PUMP No1 CIRCUIT BREAKER	BOOSTER PUMP No.1 Q7A	(Mount Internal) Q5	10mm 6mm	ABS PLASTIC W/B
06	BOOSTER PUMP No2 CIRCUIT BREAKER	BOOSTER PUMP No.2 Q7B	(Mount Internal) Q6	10mm 6mm	ABS PLASTIC W/B
07					
08					
09					
10	DISTRIBUTION BOARD CIRCUIT BREAKER	DISTRIBUTION BOARD Q10A	(Mount Internal) Q10	10mm 6mm	ABS PLASTIC W/B
11	PHASE FAILURE CIRCUIT BREAKER	STATION PHASE FAILURE RELAY Q11	<div style="position: relative;"> } Mounted On DB Escutcheon </div>	4mm 4mm	ABS PLASTIC W/B
12	SURGE FILTER CIRCUIT BREAKER	SURGE FILTER Q12		4mm 4mm	ABS PLASTIC W/B
13	SWBD GPO CIRCUIT BREAKER	SWBD GPO Q13		4mm 4mm	ABS PLASTIC W/B
14	SWBD LAPTOP GPO CIRCUIT BREAKER	LAPTOP GPO Q14		4mm 4mm	ABS PLASTIC W/B
15	AREA LIGHTING CIRCUIT BREAKER	AREA LIGHTING Q15		4mm 4mm	ABS PLASTIC W/B
16	GENERATOR AUX SUPPLY CIRCUIT BREAKER	GEN AUX SUPPLY Q16		4mm 4mm	ABS PLASTIC W/B
17	SPARE CIRCUIT BREAKER	SPARE Q17		4mm 4mm	TRAFFOLYTE W/B/W
18					
19	SPARE CIRCUIT BREAKER	SPARE Q19		4mm 4mm	ABS PLASTIC W/B
20	SPARE CIRCUIT BREAKER	SPARE Q20		4mm 4mm	ABS PLASTIC W/B
21					
22					
23A	24VDC POWER SUPPLY CIRCUIT BREAKER	24VDC POWER SUPPLY - PS1 Q30	<div style="position: relative;"> } Mounted On DB Escutcheon </div>	4mm 4mm	ABS PLASTIC W/B
23B	SPARE CIRCUIT BREAKER	SPARE Q31		4mm 4mm	ABS PLASTIC W/B
23C	SURGE FILTER ALARM RELAY CIRCUIT BREAKER	SURGE FILTER ALARM RELAY Q32		4mm 4mm	ABS PLASTIC W/B
23D	GRUNDFOG MPC CIRCUIT BREAKER	GRUNDFOG MPC Q33		4mm 4mm	ABS PLASTIC W/B
23E	SPARE CIRCUIT BREAKER	SPARE Q34		4mm 4mm	ABS PLASTIC W/B
26	PS1 24VDC BATT & LOAD CIRCUIT BREAKERS	24VDC BATT SUPPLY QD2	BATTERY ISOL QD1 24VDC DISTRIBUTION QD3	4mm 4mm	ABS PLASTIC W/B
27	PHASE FAILURE CIRCUIT BREAKER	PHASE FAILURE RELAY Q40	FED FROM LINE SIDE OF MAIN SWITCH	4mm 4mm	ABS PLASTIC W/B - R/W
28	MPC 24VDC BACKUP BATTERY COT BREAKER	MPC BATTERY ISOL QD4	FED FROM LINE SIDE OF MAIN SWITCH	4mm 4mm	ABS PLASTIC W/B - R/W
29	SURGE DIVERter FUSES	SURGE DIVERter FUSES 32A	FED FROM LINE SIDE OF MAIN SWITCH	4mm 4mm	ABS PLASTIC W/B - R/W
30	SURGE DIVERters	SURGE DIVERters	FED FROM LINE SIDE OF MAIN SWITCH	4mm 4mm	ABS PLASTIC W/B - R/W
31	SURGE FILTER ALARM RELAY	SFAR		4mm 4mm	ABS PLASTIC W/B
32	SURGE REDUCTION FILTER	SURGE REDUCTION FILTER		4mm 4mm	ABS PLASTIC W/B
33	PHASE FAILURE RELAY	ENERGEX POWER FAIL - PFRE	FED FROM LINE SIDE OF MAIN SWITCH	4mm 4mm	ABS PLASTIC W/B - R/W
34	PHASE FAILURE RELAY	SITE MAINS POWER FAIL - PFRS		4mm 4mm	ABS PLASTIC W/B - R/W
37-38	MAIN NEUTRAL & EARTH LINKS	MA N NEUTRAL	MAIN EARTH	4mm	ABS PLASTIC W/B
39	MAIN PROTECTED NEUTRAL	PROTECTED NEUTRAL		4mm	ABS PLASTIC W/B
40-41	DISTRIBUTION BOARD NEUTRAL & EARTH LINKS	NEUTRAL	EARTH	4mm	ABS PLASTIC W/B
42	INSTRUMENT EARTH LINK	INSTRUMENT EARTH		4mm	ABS PLASTIC W/B
43	FILTERED SUPPLY NEUTRAL LINK	FILTERED SUPPLY NEUTRAL		4mm 4mm	ABS PLASTIC W/B
44					
45					
46					
47					
48					
49					
50					
51					
52					
53					
54					
55	CONTROL STOP RELAY 1	CSR1		4mm	ABS PLASTIC W/B
56					
58	CONTROL STOP PUSHBUTTON - S10	CONTROL STOP		4mm	ABS PLASTIC W/B
59					
60	ACTIVE HARMONIC FILTER - CT's	HARMONIC FILTER CTS	Note: Future Label Only	4mm 4mm	ABS PLASTIC W/B
61	ACTIVE HARMONIC FILTER	HARMONIC FILTER AHF		4mm 4mm	ABS PLASTIC W/B
62	ACTIVE HARMONIC FILTER - SHORTING LINKS	HARMONIC FILTER SHORTING LINKS		4mm 4mm	ABS PLASTIC W/B

ITEM #	DESCRIPTION	LABEL 1	LABEL 2 & 3 (IF NECESSARY)	TEXT HEIGHT	MATERIAL / COLOUR
63					
64	MTS NORMAL POSITION RELAY	TS-N		4mm	ABS PLASTIC W B
65					
66					
67					
68					
69					
70					
71					
72					
73					
74					
75					
78					
79	SWITCHBOARD LIGHTING CONTROL CONTACTOR	SLCR		4mm	ABS PLASTIC W/B
81	PUMP BOX LIGHTING CONTROL RELAY	PBLCR		4mm	ABS PLASTIC W/B
82	STATION LOCAL/REMOTE SELECTOR SWITCH	STATION CONTROL MODE		4mm	ABS PLASTIC W/B
84	DELIVERY FLOWMETER TRANSMITTER	DELIVERY FLOWMETER TX		4mm	ABS PLASTIC W/B
88	SIGNAL ISOLATOR SPLITTER	SP1	SP2 SP3	4mm	ABS PLASTIC W/B
100	POWER METER CT's	POWER METER CTS		4mm	ABS PLASTIC W/B
102	POWER METER FUSES	POWER METER POTENTIAL FUSES F13-15		4mm	ABS PLASTIC W/B
103	POWER METER LINKS	POWER METER SHORTING LINKS		4mm	ABS PLASTIC W/B
105	GENERATOR 230VAC CONNECTION SOCKET	GENERATOR ANCILLARY SUPPLY		4mm	TRAFFOLYTE W/W
106	GENERATOR POWER CONNECTION SOCKET	GENERATOR CONNECTION		4mm	TRAFFOLYTE W/W
110	LAPTOP GPO - X2	LAPTOP GPO ONLY		4mm	ABS PLASTIC W/B
116	AREA LIGHTING CONTROL SWITCH - S12	AREA LIGHTING		4mm	ABS PLASTIC W/B
117	AREA LIGHTING CONTROL RELAY	ALCR		4mm	ABS PLASTIC W/B
125	CONTROL SYS 230VAC/24VDC POWER SUPPLY	CONTROL SYSTEM 24VDC POWER SUPPLY - PS1		4mm	ABS PLASTIC W/B
126					
127	24V/13.8VDC CONVERTER	24/12 VDC CONVERTER		4mm	TRAFFOLYTE W/W
128					
129	TELEMETRY UNIT	RTU		4mm	ABS PLASTIC W/B
131	ETHERNET SWITCH	ETHERNET SWITCH		4mm	ABS PLASTIC W/B
133	ROUTER	ROUTER		4mm	ABS PLASTIC W/B
134	ROUTER COAX SURGE DIVERTER	SURGE DIVERTER		4mm	ABS PLASTIC W/B
135	RADIO	RADIO		4mm	ABS PLASTIC W/B
137	RADIO COAX SURGE DIVERTER	RADIO SURGE DIVERTER		4mm	ABS PLASTIC W/B
143	PS1 - BATTERIES	PS1 BATTERIES 21kg EACH	(Mount label on front of battery box) (Mount label on enclosure)	4mm	ABS PLASTIC W/B
144	MPC - BATTERY	MPC BATTERY		4mm	ABS PLASTIC W/B
	TERMINAL HEADER	RTU POWER SUPPLIES		4mm	ABS PLASTIC W/B
	TERMINAL HEADER	DIGITAL INPUTS DI1 - DI2		4mm	ABS PLASTIC W/B
	TERMINAL HEADER	DIGITAL OUTPUTS DO1		4mm	ABS PLASTIC W/B
	TERMINAL HEADER	ANALOG INPUTS AI1		4mm	ABS PLASTIC W/B
	HEADER LABEL (Incomer Section)	MEN BEHIND		6mm	ABS PLASTIC W/B
	HEADER LABEL (Main Switch Section)	SURGE DIVERTER FUSES BEHIND		6mm	ABS PLASTIC W/B
	HEADER LABEL (Above DB Isolator)	DISTRIBUTION BOARD ISOLATOR		6mm	ABS PLASTIC W/B
	HEADER LABEL (Above Circuit Breakers)	DB01		6mm	ABS PLASTIC W/B
	HEADER LABEL (Above Circuit Breakers)	NON FILTERED SUPPLY DB02		6mm	ABS PLASTIC W/B
	HEADER LABEL (Above Circuit Breakers)	FILTERED SUPPLY WARNING		6mm	ABS PLASTIC W/B
190	WARNING LABEL (On Shroud Where Required)	230VAC GENERATOR MEN MUST BE REMOVED BEFORE CONNECTION	(Mount Adjacent Generator R/W Socket)	4mm	ABS PLASTIC R/W
200	GENERATOR MEN WARNING			6mm	ABS PLASTIC W/B
201	GENERATOR INLET SOCKET	CAUTION - TERMINALS LIVE WHEN GENERATOR CIRCUIT BREAKER - Q3 IS ENERGISED FROM ANOTHER EXTERNAL SOURCE MAX LOAD - 63A		4mm 4mm	ABS PLASTIC R/W
202	MAIN SWITCH WARNING LABEL Mount label above Normal & Generator main switches Label size to be approximately 240 x 60	WARNING: THIS BOARD MAY BE SUPPLIED FROM 2 SOURCES. ISOLATE BOTH NORMAL SUPPLY CB AND GENERATOR SUPPLY CB BEFORE WORKING ON THIS SWITCHBOARD.		6mm	ABS PLASTIC R/W
203	METER PANEL WARNING SIGN	(DUPLICATE LABELS X & Y)	(MOUNT INSIDE METER BOX ADJACENT METERS)	6mm 6mm	ABS PLASTIC W/B

LABEL	TEXT	TEXT HEIGHT	PAINT FILL LETTERING	QTY
A	WB???	20mm	Black	1
B	RTU	10mm	Black	1
C	COMMON CONTROL	10mm	Black	1
D	WARNING THIS SITE IS MONITORED BY NETWORK CONTROL PLEASE INFORM THE OPERATOR BEFORE ISOLATING PUMPS OR STATION	8mm	Black	2
E	PLEASE CHECK THAT THE STATION IS IN REMOTE MODE BEFORE LEAVING SITE	8mm	Black	1
F	MAIN SWITCHES	10mm	Black	1
G	MANUAL TRANSFER SWITCH	10mm	Black	1
H	SURGE DIVERTERS & MTS CONTROLS	10mm	Black	1
I	SPARE	10mm	Black	1
J				
K	SUPPLY AUTHORITY METERING	10mm	Black	1
L	BOOSTER PUMP ISOLATORS	10mm	Black	1
M	DISTRIBUTION BOARD	10mm	Black	1
N				
O	BATTERIES - 24VDC	10mm	Black	1
P	GENERATOR PLUG CONNECTIONS	10mm	Black	1
Q				
R	POWER METER	10mm	Black	1
V	CABLE ZONE	10mm	Black	1
W	HARMONIC FILTER	10mm	Black	1
X	WARNING THIS SITE IS CONTINUOUSLY MONITORED CONTACT CONTROL ROOM BEFORE OPENING METER DOOR AND PRIOR TO LEAVING SITE	8mm	Black	1
Y	Phone: 3056 7179 (Built up directly under Label 'X')	8mm	Black	1
EXTERNAL LABELS 1mm THICK, 316 GRADE STAINLESS STEEL FIXED WITH M3 316 STAINLESS STEEL METAL THREADS.				

<u>INTERNAL WARNING LABEL LIST</u>				
LABEL	TEXT	TEXT HEIGHT	PAINT FILL LETTERING	QTY
S	DANGER - 2 SOURCES OF SUPPLY	10mm	Red	1
T	DANGER 400V	10mm	Red	1

DETAIL Q			
EXTERNAL DOOR WARNING LABEL LIST			
LABEL	TEXT	DETAILS	QTY
W1	<p>DANGER</p> <p>ELECTRICAL EQUIPMENT</p> <p>AUTHORISED ACCESS ONLY</p> <p>REMOVED MONITORED SITE</p> <p>For faults and emergencies call : 132364</p>	<p>280mm x 190 x 2mm + 4 x 5mm FIXING HOLES.</p> <p>ALUMINIUM POWDER COATED</p> <p>WHITE 5 COLOUR SCREEN PRINTED -</p> <p>ANTI-GRABITTI LAMINATE</p> <p>REFER DETAILS ON SHEET 21</p>	1
-	ACR FLASH LABELS- TYPE 1,2 & 3	REFER DETAILS ON SHEET 21	-

FIELD LABEL LIST				
LABEL	TEXT	TEXT HEIGHT	PAINT FILL LETTERING	QTY
AA	MAIN EARTH CONDUCTOR - DO NOT DISCONNECT (On Main Earth Electrode)	5mm		1

<p>ASSET/PROJECT</p> <p>WB???</p> <p>TEST ROAD, WATER BOOSTER</p> <p>WATER BOOSTER</p> <p>PUMP STATION</p>		<p>DRAWING TITLE</p> <p>PUMP STATION SW</p> <p>WB???-1040-S</p> <p>LABEL</p> <p>SCHEDULE</p>
<p>DRAWING STATUS</p> <p><i>FOR REVIEW</i></p>	<p>URBAN UTILITIES DRAWING No.</p> <p>WB???-1000-EE-D</p>	

Sheet 20

AMENDMENTS						
REV	DATE	DESCRIPTION	DESIGNER	RPEQ SIGNED	RPEQ NO.	COMPAN NAME

AS CONSTRUCTED CERTIFICATION	
FOR DRAWING REVISION	
I CERTIFY THAT THE AS CONSTRUCTED DETAILS SHOWN ON THIS PLAN ARE A TRUE AND ACCURATE RECORD OF THE WORKS.	
SIGNATURE	DATE
NAME	RPEQ No.
DISCIPLINE	COMPANY NAME

ENGINEERING CERTIFICATION			
SIGNATURE	RPEQ No.	DISCIPLINE	DATE
SIGNATURE	RPEQ No.	DISCIPLINE	DATE
DESIGN MANAGER'S SIGNATURE			DATE
PROJECT MANAGER'S SIGNATURE			DATE

DESIGN DRAFTING	
DRAFTED BY	DATE
DESIGNED BY	DATE
URBAN UTILITIES CIP CODE	
URBAN UTILITIES DESIGN W/O No.	
URBAN UTILITIES CONSTRUCTION W/O No.	

PROJECT TEAM

 **UrbanUtilities**

ASSET/PROJECT	WB???
	TEST ROAD, WATER BOOSTER WATER BOOSTER PUMP STATION
DRAWING STATUS	<i>FOR REVIEW</i>

DRAWING TITLE		REV.
PUMP STATION SWITCHBOARD WB???-1040-SWB-0001 LABEL SCHEDULE		
URBAN UTILITIES DRAWING No.		
WB???-1000-EE-DRG-0020	2	

CONSTRUCTION - EXTERNAL SWITCHBOARD

Cubicle construction 3mm Marine grade Aluminium (5251).
Plinth construction 80x60 channel 6061 T6 Grade Aluminium.
Folded, "Pulse MIG" & "TIG welded" with all visible seams and joints fully welded, free from splatter and ground smooth where needed.
External doors and covers fitted with Emka 1011-207 self grip seal.
All Fixings shall be 316 grade stainless steel.
Stainless Steel "D" Handles fitted where indicated on the drawings.
M6 Earth studs fixed to the interior of all doors and hinged escutcheons and on adjacent cubicle interior surfaces.
Fit dedicated earth stud adjacent main earth bar for switchboard earth.
Door stiffeners, door stays, cable straps, and document holders etc fitted where shown on the drawings.
Door stay arms to be S/Steel and of sufficient strength to prevent being deformed when subjected to reasonable loads, Minimum 3mm S/Steel.
Lift-off covers and mounting panels fixed with M8 studs & chrome acorn nuts.
Gland plates manufactured from 5mm aluminium, unless otherwise shown.
Gland/Inspect/Access plate openings fitted with M6x1.0 flat head closed end rivet nuts. (Detail F).
Cable glands to be fitted with compression side installed within cubicle. (Detail G)
Gland plate seals attached to cubicle not gland plate.
Gland plate fixings are NOT more than 100 mm apart.
Gland plates are NOT to be split.
All gland plates to be earthed.
Provide Shrouding to all live parts to IP20 where required.
Hinges (external) Selectrix HIB650ss-316.
Stainless Steel Star washers fitted under all hinge screws.
Hinged escutcheons fixed with Emka 1/4 turn 1000-U142.
All equipment to be removable via front access.
Install switchboard with non-hygroscopic material between plinth and concrete slab. (Detail E1)
All escutcheons to open a minimum of 90°
All sheet metal edging to be de-burred.
All switchboard LED lights to be mounted on the horizontal plane.

OPERATING PARAMETERS

Standard	AS 61439.1
Current & Frequency	AC 50Hz
Rated Operational Voltage Ue	400 VAC
Rated Insulation Voltage Ui	660 V
Rated Auxiliary Voltage	230 VAC / 24 VDC
Rated Current (Main Bus)	125A
Short Circuit Current Isc	20 kA
Duration of Isc	1 sec
Degree of Protection	IP 56 to AS 1939
Measure of Protection by barriers and enclosures	
Service Conditions	Outdoors
Mass	Not exceeding 2000kg
Forms of Segregation	Form 4a, DB Section Form 1
Earthing System	TN-C-S
Ambient Temperature	45°C Max.

PAINTING

Aluminium Surface Preparation.
Finish smooth all exposed welds, clean, descale, and degrease all surfaces.
Surfaces pretreatment in accordance with AS 1580 & AS 3715 using Novox LF acid etch cleaner, Novacoat 12 conversion coating, & clean water rinses

Apply DULUX ALPHATECH 3000 powder coat to manufacturer's recommendations.
CUBICLE & EXTERNAL COMPONENTS :- DULUX Mist Green (36648) matt finish.
INTERIOR ITEMS (mounting panels, escutcheons, etc.) :- DULUX Bright White (32166)
Minimum Dry Film Thickness all surfaces 50 microns.

WIRING

All wiring to be PVC V90 HT 0.6/1Kv Grade with tinned conductor.
Control and instrumentation wiring has flexible copper conductors, and is colour coded as detailed below, each individual wire shall be numbered each end, and terminated by the use of appropriate pre-insulated crimp lugs or pins.
Separate lugs or pins shall be used for each conductor. A proprietary double pin lug may be used to terminate two conductors.
Use proprietary bridging links when required to common up terminals.
Not more than two wires shall be connected to any terminal.
Not more than one lug shall be connected on one side of any tunnel type terminal. Where multiple connections are required on tunnel terminals, proprietary terminal link bars shall be used.
Power wiring to be minimum 2.5sqmm stranded copper conductors, phase colour coded as detailed below.
Control wiring to be minimum 1.0sqmm flexible copper conductors, colour coded as detailed below.
Low level control signals to be minimum 0.5sqmm flexible copper conductors. colour coded as detailed below.
Wiring between RTU terminals & RTU marshalling terminals to be multicore cable with 0.5sqmm flexible copper conductors.
4-20mA analog signals (internal & external) wired in shielded pair minimum size 0.5sqmm, and earthed at one end only. (Switchboard end for external signals)
All 230VAC wiring in the RTU section and cable zones shall be double insulated and all terminals shall be shrouded and labelled- 'Danger 230VAC' or 'Danger 400VAC'
1Ø & 3Ø Outlets on escutcheon to be wired in double insulated cable.
Provide shrouding with warning label over all 230VAC door/escutcheon mounted equipment.
Earth cables minimum 2.5sqmm flexible.
All equipment shrouding within switchboard to be minimum IP20.
Doors, gland plates and hinged escutcheons bonded with flexible tinned copper braiding.
Disconnection zone door to be bonded with flexible copper B/Wire. Heat shrink all lugs.
Switchboard to have dedicated earthing cable bonding directly to main earth bar.
Ensure minimum clearance of 100mm is maintained between cable ducting & gland plates.
Wire numbering will be equal to Grafoplast SI2000 system.
Terminal strips to be mounted 30mm off equipment panel to aid termination.
Wire numbers are readable left to right, bottom to top as shown.

COLOUR CODE

Phase wiring (A,B &C)	Red, White, Blue	2.5sqmm (min)
Potential Metering (230/400 VAC)	Red, White, Blue, Black	1.5sqmm
Current Metering (Secondary)	Red, White, Blue, Grey	2.5sqmm
230 VAC Control Active	Red	1.0sqmm
230 VAC Neutral	Black	1.0sqmm
Extra Low VDC Positive supplies	Orange	1.0sqmm
Extra Low VDC Negative supplies	Violet	1.0sqmm
General Extra Low VDC Wiring	Grey	1.0sqmm
RTU & PLC Wiring	Grey	0.5sqmm
Electrode Wiring	Salmon	1.0sqmm
Intrinsically safe wiring	Light Blue	1.5sqmm
Earth	Green/Yellow	2.5sqmm (min)
Door & Escutcheon Earth Bonds	Green/Yellow	4 sqmm
Instrument Shield Earth	Green/Yellow	1.5sqmm (min)

Internal labels secured by M3 chrome plated metal threads.
CB's to be identified with individual labels as per label schedule.
Labels obstructed by switchboard wiring are relocated to adjacent duct lid and secured by M3 nylon threads. Lid to be secured by a single cable tie at one corner.
External switchboard labels to be 1mm thick 316 grade stainless steel secured by M3 316 stainless steel metal threads.
All internal and external labels are to have bevelled edges.

LABELS

Internal labels W/B engraved ABS PLASTIC to label schedule.
Warning labels R/W engraved ABS PLASTIC to label schedule.
E/Stop labels Y/B engraved ABS PLASTIC to label schedule.
First letter = Background colour, Second letter = Lettering colour.

Main switch label		10mm 6mm	Material ABS PLASTIC Colour B/W
Pump CB labels		10mm 6mm	Material ABS PLASTIC Colour W/B
Compartment door labels		10mm	Material STAINLESS STEEL Colour Black Infill
E/Stop labels		4mm	Material ABS PLASTIC Colour Y/B
Equipment labels		4mm	Material ABS PLASTIC Colour W/B

Doors 1,3-6,8

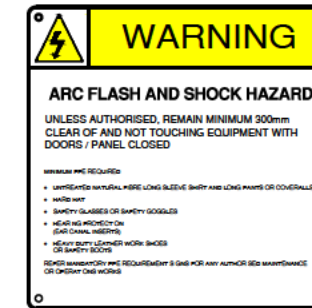
Selectrix - Swing Handle [redacted] Stainless Steel Selectrix - 3
point lock rod set - 1 [redacted] Lockwood Barrel Lock Key Codes
[redacted] refer to each door for clarification.

Door 2

Selectrix - Swing Handle [redacted] Padlockable. Stainless Steel Selectrix -
3 point lock rod set - [redacted]
ENERGEX padlock 4mm brass pin tumbler.
ENERGEX [redacted] c/w 2 keys

Door 7

Selectrix - Swing Handle [redacted] Stainless Steel Selectrix - 3
point lock rod set - [redacted] Lockwood Barrel Lock Key Codes
[redacted] refer to each door for clarification.



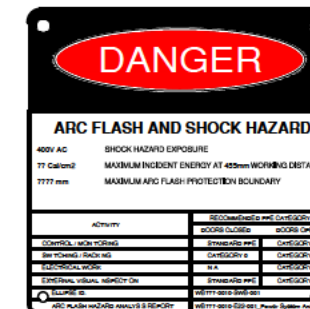
ARC FLASH & SHOCK HAZARD SIGN
TYPE 1

Mounted on all compound gates or switchboard building access door for indoor installations.
Refer to QUU standard drawing: 486/1/25-0005-001



ARC FLASH & SHOCK HAZARD SIGN
TYPE 2

Mounted on common control compartment escutcheon as shown on general arrangement. Sht 24 & 25.
Refer to QUU standard drawing: 486/1/25-0005-002



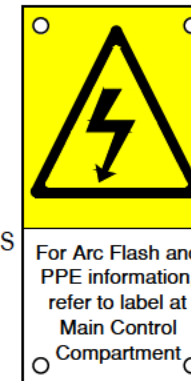
Common Control Compartment

ARC FLASH & SHOCK HAZARD SIGN
TYPE 3

Mounted on common control compartment escutcheon as shown on general arrangement. Sht 24 & 25.
Refer to QUU standard drawing: 486/1/25-0005-003




LABEL W1 SAFETY SIGN:
280x190x2mm + 4x4mm FIX NG HOLES.
ALUMINIUM POWDER COATED WHITE.
5 COLOR SCREEN PRINTED
+ANTI-GRAFFITI LAMINATE.
Mounted on RTU compartment door as shown on general arrangement.
Sht 24 & 25

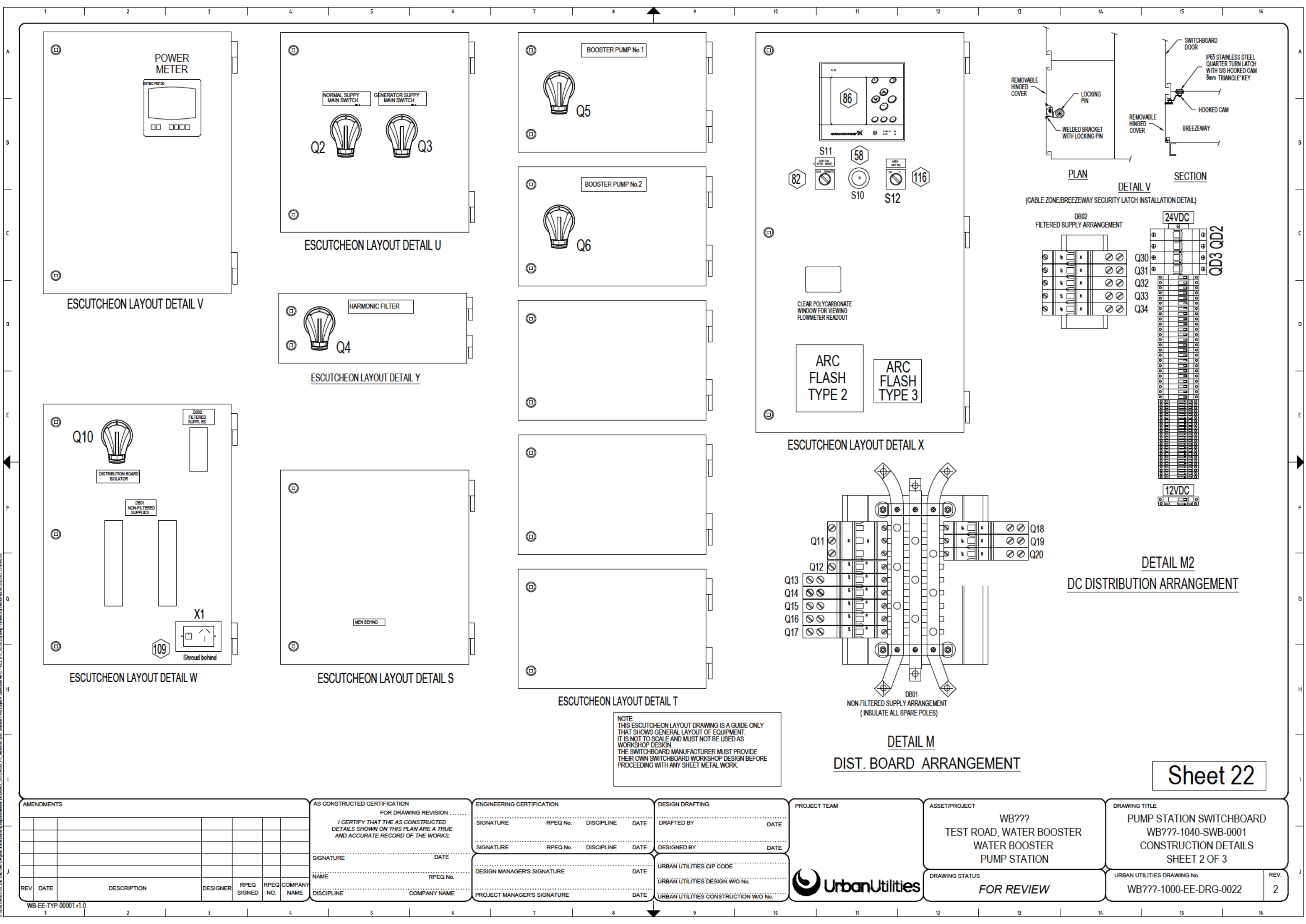


ARC FLASH & SHOCK HAZARD SIGN
TYPE 4

Mounted on all switchboard external doors, hinged and removable panels as shown on general arrangement. Sht 24 & 25
Refer to QUU standard drawing: 486/1/25-0005-004

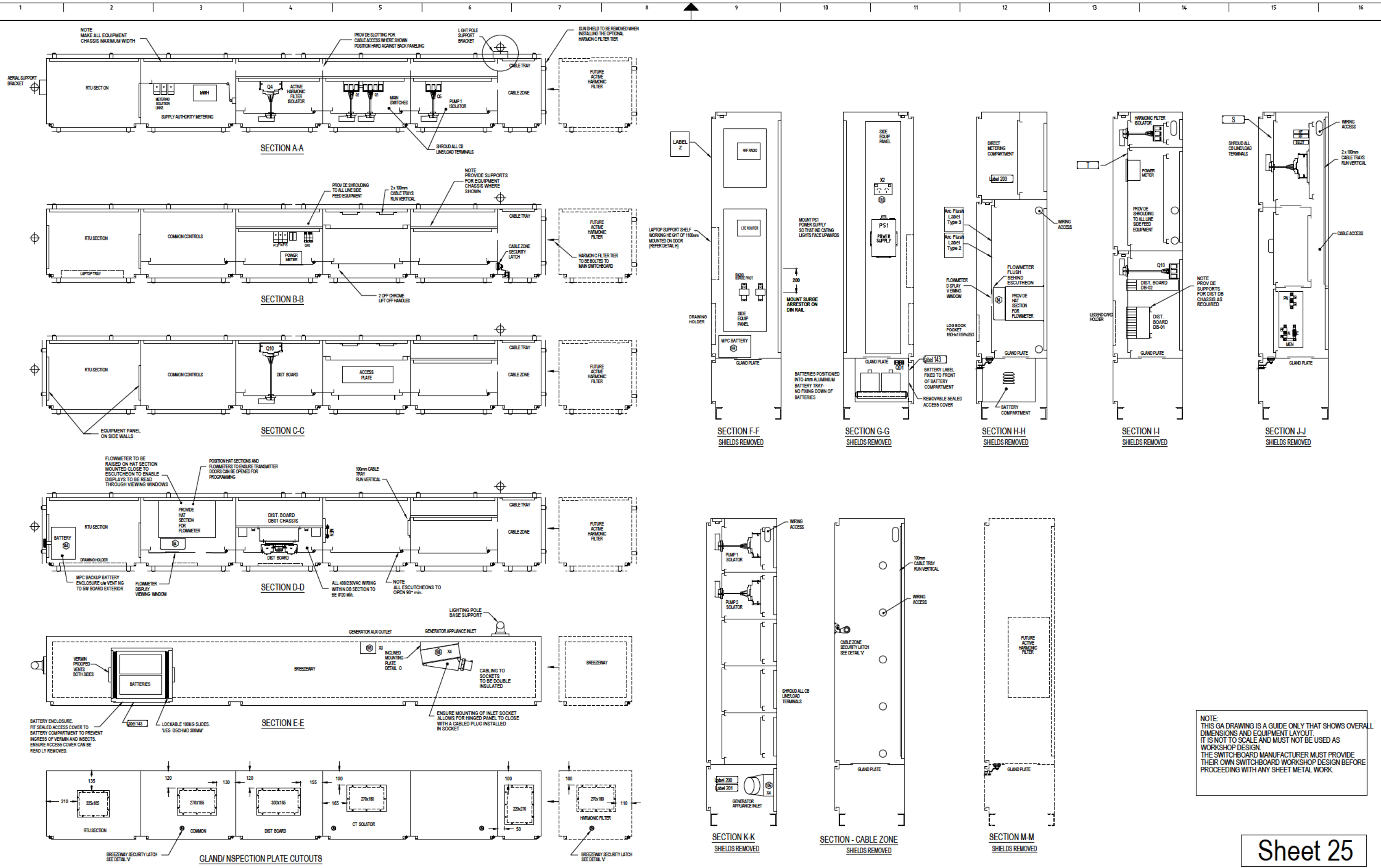
Sheet 21

AMENDMENTS							AS CONSTRUCTED CERTIFICATION		ENGINEERING CERTIFICATION				DESIGN DRAFTING		PROJECT TEAM		ASSET/PROJECT		DRAWING TITLE		
							FOR DRAWING REVISION										WB???		PUMP STATION SWITCHBOARD		
							I CERTIFY THAT THE AS CONSTRUCTED		SIGNATURE				RPEQ No.		DISCIPLINE		DATE		TEST ROAD, WATER BOOSTER		
							DETAILS SHOWN ON THIS PLAN ARE A TRUE												WB???-1040-SWB-0001		
							AND ACCURATE RECORD OF THE WORKS.		SIGNATURE				RPEQ No.		DISCIPLINE		DATE		CONSTRUCTION DETAILS		
																			SHEET 1 OF 3		
							SIGNATURE		SIGNATURE				RPEQ No.		DISCIPLINE		DATE				
							DATE		DESIGN MANAGER'S SIGNATURE												
							NAME		DATE				URBAN UTILITIES CIP CODE								
							RPEQ No.		PROJECT MANAGER'S SIGNATURE				URBAN UTILITIES DESIGN W/O No.								
							DISCIPLINE		DATE				URBAN UTILITIES CONSTRUCTION W/O No.								
							COMPANY NAME														
REV	DATE	DESCRIPTION				DESIGNER	RPEQ SIGNED	RPEQ NO.	COMPANY NAME												
																					
															DRAWING STATUS		URBAN UTILITIES DRAWING No.			REV.	
															FOR REVIEW		WB???-1000-EE-DRG-0021			2	




NOTE:
THIS ESUTCHEON LAYOUT DRAWING IS A GUIDE ONLY
THAT SHOWS GENERAL LAYOUT OF EQUIPMENT.
IT IS NOT TO SCALE AND MUST NOT BE USED AS
WORKSHOP DESIGN.
THE SWITCHBOARD MANUFACTURER MUST PROVIDE
THEIR OWN SWITCHBOARD WORKSHOP DESIGN BEFORE
PROCEEDING WITH ANY SHEET METAL WORK.

AMENDMENTS						AS CONSTRUCTED CERTIFICATION				ENGINEERING CERTIFICATION				DESIGN DRAFTING		PROJECT TEAM		ASSET/PROJECT		DRAWING TITLE	
						FOR DRAWING REVISION				SIGNATURE RPEQ No. DISCIPLINE DATE				DRAFTED BY DATE				WB???		PUMP STATION SWITCHBOARD	
						I CERTIFY THAT THE AS CONSTRUCTED DETAILS SHOWN ON THIS PLAN ARE A TRUE AND ACCURATE RECORD OF THE WORKS.				SIGNATURE RPEQ No. DISCIPLINE DATE				DESIGNED BY DATE				TEST ROAD, WATER BOOSTER		WB???-1040-SWB-0001	
						SIGNATURE DATE				SIGNATURE RPEQ No. DISCIPLINE DATE								WATER BOOSTER		CONSTRUCTION DETAILS	
						NAME RPEQ No.				DESIGN MANAGER'S SIGNATURE DATE				URBANTILITIES CIP CODE				PUMP STATION		SHEET 2 OF 3	
						DISCIPLINE COMPANY NAME				PROJECT MANAGER'S SIGNATURE DATE				URBANTILITIES DESIGN W/O No.				DRAWING STATUS		URBANTILITIES DRAWING No.	
														URBANTILITIES CONSTRUCTION W/O No.				FOR REVIEW		WB???-1000-EE-DRG-0022	
																				REV.	
																				2	

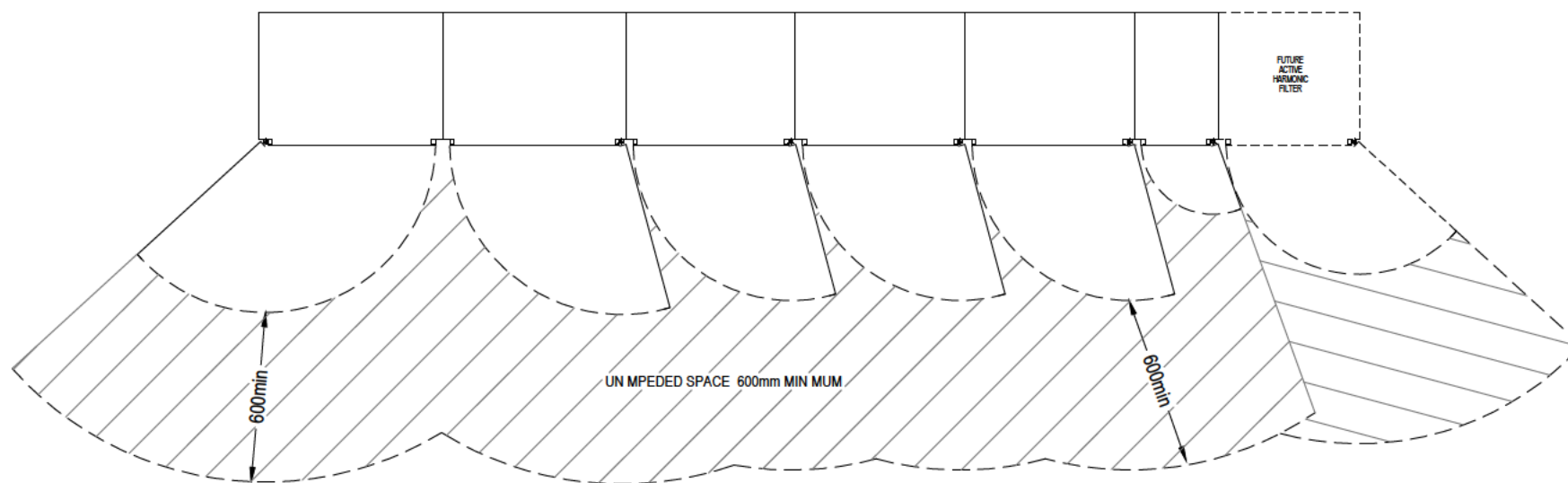


NOTE:
THIS GA DRAWING IS A GUIDE ONLY THAT SHOWS OVERALL
DIMENSIONS AND EQUIPMENT LAYOUT.
IT IS NOT TO SCALE AND MUST NOT BE USED AS
WORKSHOP DESIGN.
THE SWITCHBOARD MANUFACTURER MUST PROVIDE
THEIR OWN SWITCHBOARD WORKSHOP DESIGN BEFORE
PROCEEDING WITH ANY SHEET METAL WORK.

Sheet 25

AMENDMENTS							AS CONSTRUCTED CERTIFICATION FOR DRAWING REVISION _____ I CERTIFY THAT THE AS CONSTRUCTED DETAILS SHOWN ON THIS PLAN ARE A TRUE AND ACCURATE RECORD OF THE WORKS.				ENGINEERING CERTIFICATION				DESIGN DRAFTING				PROJECT TEAM		ASSET/PROJECT WB??? TEST ROAD, WATER BOOSTER WATER BOOSTER PUMP STATION				DRAWING TITLE PUMP STATION SWITCHBOARD WB???-1040-SWB-0001 GENERAL ARRANGEMENT PUMP SWITCHBOARD - SECTIONS										
												SIGNATURE		RPEQ No.		DISCIPLINE		DATE											DRAFTED BY		DATE				
												SIGNATURE		RPEQ No.		DISCIPLINE		DATE											DESIGNED BY		DATE				
												SIGNATURE		DATE		DESIGN MANAGER'S SIGNATURE													DATE		URBAN UTILITIES CIP CODE				
								NAME		RPEQ No.		DESIGN MANAGER'S SIGNATURE				DATE		URBAN UTILITIES DESIGN W/O No.																	
REV	DATE	DESCRIPTION				DESIGNER	RPEQ SIGNED	RPEQ NO.	COMPANY NAME	DISCIPLINE		COMPANY NAME		PROJECT MANAGER'S SIGNATURE				DATE		URBAN UTILITIES CONSTRUCTION W/O No.						DRAWING STATUS				URBAN UTILITIES DRAWING No. WB???-1000-EE-DRG-0025				REV. 2	

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ACCESS CLEARANCES


Sheet 26

AMENDMENTS						
REV	DATE	DESCRIPTION	DESIGNER	RPEQ SIGNED	RPEQ NO.	COMPANY NAME

AS CONSTRUCTED CERTIFICATION	
FOR DRAWING REVISION _____	
I CERTIFY THAT THE AS CONSTRUCTED DETAILS SHOWN ON THIS PLAN ARE A TRUE AND ACCURATE RECORD OF THE WORKS.	
SIGNATURE	DATE
NAME	RPEQ No.
DISCIPLINE	COMPANY NAME

ENGINEERING CERTIFICATION			
SIGNATURE	RPEQ No.	DISCIPLINE	DATE
SIGNATURE	RPEQ No.	DISCIPLINE	DATE
DESIGN MANAGER'S SIGNATURE		DATE	
PROJECT MANAGER'S SIGNATURE		DATE	

DESIGN DRAFTING	
DRAFTED BY	DATE
DESIGNED BY	DATE
URBAN UTILITIES CIP CODE	
URBAN UTILITIES DESIGN W/O No.	
URBAN UTILITIES CONSTRUCTION W/O No.	

PROJECT TEAM


ASSET/PROJECT
WB???
TEST ROAD, WATER BOOSTER
WATER BOOSTER
PUMP STATION
DRAWING STATUS

DRAWING TITLE	
PUMP STATION SWITCHBOARD	
WB???-1040-SWB-0001	
CLEARANCE REQUIREMENTS	
PUMP SWITCHBOARD	
URBAN UTILITIES DRAWING No.	REV.
WB???-1000-EE-DRG-0026	2

Sheet 27

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